See Equipment Review Article—Page 34

Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

Vol. XV, No. 4 **FEBRUARY, 1939** **$2.00 a Year**

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Letters from Readers

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

N. Y. Library

Would it be possible for you to send us a copy of Vol. 14, No. 2 (December 1937) of INDUSTRIAL FINISHING? It is needed for replacement to complete our file.—The New York Public Library.

Playing Cards

Approximately a year ago an article pertaining to the finishing of playing cards appeared in your magazine. We would appreciate it very much if you would send us a copy of this particular issue.—Monsanto Chemical Co.

Rayon Flock

If possible, will you please advise the proper source of supply for a fast color rayon flock suitable for application on woven and knit materials?—R. Mfg. Co. (Athletic Equiment).

A ½-page advertisement on flocks appears in every issue of INDUSTRIAL FINISHING.—ED.

Flock Finishing

We would appreciate information as to the manufacture of materials used for imitation of suede finishes. I believe this is some sort of hair blown on over a binder. Any information you can give me regarding the above will be appreciated.—D. G. Co. (Wood Specialties; Radio Cabinets).

Several articles about Flock Finishing have been published in INDUSTRIAL FINISHING and others will appear soon.—ED.

For Rubbing Filler

We would appreciate your putting us in touch with a source of supply for Sisal-tow, or a similar material used for rubbing filler.—K. Furn. Co.

"Gold Plate"

In looking through December 1936 issue of INDUSTRIAL FINISHING, I notice an inquiry in regard to imitation gold plate. If you have any information on this article or if you can furnish us with the name of a firm that sells same, I would appreciate hearing from you.—U. Antique Shop.

Names of manufacturers have been given.—ED.

Wood Crack Filler

We desire information in regard to the checking of 8/4 hard maple. We manufacture station wagons wherein we use a large quantity of 8/4 and 10/4 hard maple, and we are having considerable trouble with regard to surface checks. Do you know of any

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product that could be used in order to fill and seal these surface checks permanently — something that will stay indefinitely in the wood when subjected to outside exposure?—A. M. Co.

The names of several manufacturers of crack filler have been submitted.—ED.

"Kelsanite"

Would you be kind enough to give us the name of the manufacturer of "Kelsanite," which is a removal coat for spray booths?—V. R. Co. (Mfrs. of Desk Calendars).

It's Kelsan Products, St. Clair, Mich.—ED.

Fireproofing Wood

In an old issue of your publication, INDUSTRIAL FINISHING (for September 1935) there appears an article on fireproofing wood. At your convenience, please send us the names of manufacturers of these processes and whatever other information you may have relative to same.—D. C. Co. (Cash Registers).

"Amiglaze"

We are trying to locate the manufacturer of some type of finishing material by the name of "Ami-Glaze." It is supposedly made somewhere in New Jersey and is used in place of lacquer or varnish.—G. Co. (Fine Furniture since 1866).

We understand that this is a cellulose liquid finishing compound made by Amiglaze Co. Inc., New York, N. Y.—ED.

Porcelain Repair

We note a couple of inquiries in your December issue regarding porcelain repair material. We also would be glad to get any information you could give us along those lines.—C. R. Mfg. Co. (Radiators).

We use quite a bit of enamel-ware finished in white porcelain and the nature of our products is such that we have a considerable amount of chipping on the porcelain enamel. We are, therefore, interested in any products that will enable us to re-

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391 Park Avenue Newark, N. J.

pair the white porcelain enamel and give a satisfactory appearance without having a patched look.—K. F. Co. (Nursery Furniture).

On page 21 of the May 1938 issue of INDUSTRIAL FINISHING, you have a little write-up about porcelain repair finish. Can you please tell me where we can purchase a stick of the material you mentioned in this article?—A. B. Co. (Venetian Blind Mfrs.).

A manufacturer of shellac sticks and lacquer sticks, advertising every other month in INDUSTRIAL FINISHING (in January issue) has a material for repairing damaged places in porcelain finishes. The company's name and address is being sent to you. —ED.

Paint Meter Wanted

Referring to your February 1938 edition, page 19, we note descriptive data on Niagara Paint Meters. Since we are unable to locate an address for the manufacture of this particular piece of equipment in our catalogs and records here in this office, we are wondering if you could tell us the address of the manufacturer?—E. T. Co. (Overseas Operations).

It is Buffalo Meter Co., 2917 Main St., Buffalo, N. Y.—ED.

Drying Oven

In looking through the back numbers of INDUSTRIAL FINISHING, we notice in your March 1935 issue, page 41, an article on a painting and drying system for playing cards. We are interested in a drier for a production belt line to dry a fast-setting shellac sealer in 30 or 40-ft. We wish to build this ourselves so all we need is a suggested design and heater system for shellac.—H. O. H. Co. (Venetian Blinds).

Bleaching Is Popular

While we have not developed a new lot of materials during the past 12 months, we have found that many new users of our principal specialty (bleaching material) have almost without suggestion from ourselves, found adaptation of bleaches in many profitable ways.

Particularly we have in mind large fixture concerns who have so transformed the appearance of less ex-

(Continued on page 84)

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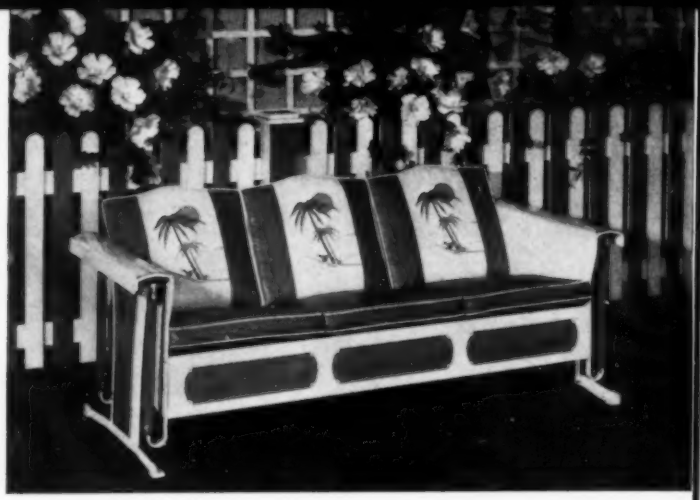


What's New in Furniture

BY ROSALIE FLANK
American Furniture Mart, Chicago

TWO SCHOOLS OF DESIGN —the one conservative traditional, the other liberal contemporary — forgot party lines, compared basic facts and found that an interchange of ideas had proved mutually beneficial over the past few years. Thus new samples at the recent Winter National Home Furnishings Show, held at the American Furniture Mart, Jan. 9 to 21, showed a compromise of design rather than a fight between the opposing factions.

"Contemporary light scaled modern," heretofore termed "Swedish" modern for lack of better distinction, found that its real secret lay in simplified 18th Century of Sheraton, Hepplewhite and Duncan Phyfe origin. Traditional pieces, on the other hand, borrowed the simplicity theme from its younger contemporary sister, and the new beauty tonic proved an elixir which gave a fresh youthful appeal to new models.

What then is the basic difference between traditional and contemporary styling according to the latest designs? For the most part very little—possibly finish, upholstery and trim. Basically, however, the family resemblance is very pronounced.

Golden Tone Finish

On the better designed pieces, which received wide acceptance, the contemporary groups were shown in a golden tone finish, a brown glaze applied to the bleached surface to bring it back

Styles, Finishes and Colors

(Opposite page) A metal panel replaces cloth valance on this attractive glider. Moon and palms form decoration. Bright red accents sparkling white.

(Illustration above) Part of a bedroom suite in bleached walnut—a new trend in the decorative treatment of Swedish Modern designs. Slotted grooves on the sides of drawers are substituted for the conventional hardware generally used.

to a toasted color just a few shades from dark brown. Legs were tapered and gracefully curved. Trims consisted of small mouldings, simple carvings and, in a few instances, marquetry inlays in small leaf-like patterns. Extremely interesting were several instances when the contemporary pieces were shown in a dark finish, the brown tone being accented by distinctive hardware or beautifully designed upholstery.

Traditional pieces clearly declared their background with the familiar earmarks that distinguish the old masters—but a definite trend toward simplification was noticed, blending the contemporary with the traditional in all types of settings.

Cane continued to be a favored trim on head and footboards of beds, chair backs, buffet and china doors, the caning usually being finished in the same tone as the wood.

Hardware, usually designed special and of metal, was a distinguishing feature of the contem-

porary styling. In some instances wood wound with cane provided a distinctive pull.

Peculiarities of the market, which clearly indicated the trend, was an unprecedented demand for dining room groups of 18th Century origin, shown in bleached tones which gave them a contemporary appearance; also, the unusual success of contemporary novelty groups shown in a brown tone which made the groups almost 18th Century in appearance. This balancing of design was looked upon by most market observers as a healthy sign tending toward wider acceptance of the new designs and greater stabilization of the new trend which appears destined to continue for some time.

Walnut; Mahogany; Maple

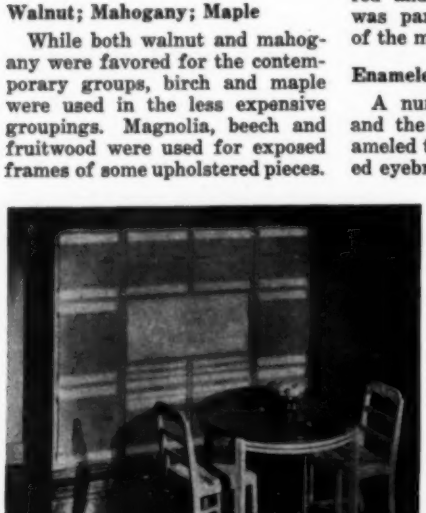
While both walnut and mahogany were favored for the contemporary groups, birch and maple were used in the less expensive groupings. Magnolia, beech and fruitwood were used for exposed frames of some upholstered pieces.

Newest upholstery color, used impartially on contemporary and traditional design, was an "ashes of rose" tone termed "Dregs of Wine" and "Mocha" by various manufacturers. Chartreuse was another color widely used with greyed rose tones, various shades of beige and yellows accenting new upholstered suites.

Early American and Colonial groups in maple continued to gain ground in dealer acceptance. New models in a "sandwich" finish, which resembled a light flat yellowish tone, were newcomers. The poularity of the traditional honey colored maple continued, with hand rubbed details important talking points. Decalcomania trims on maple were attention getters. A trend away from the red and toward the brown tone was particularly noted on some of the maple lines.

Enameled Suites

A number of enameled suites and the wide use of colored enameled trim raised many interested eyebrows as the tendency back



A stunning contribution to the space saving furnishings is this new grey and white space-saver kitchen cabinet and matching utilities with porcelain work-shelf which folds conveniently into the cabinet. The round table with red linoleum top is another new contribution.

to the painted trim continued on the higher priced, high-styled lines. A complete contemporary group in olive green enamel was one of the market eye-openers, together with a new dinette in black lacquer with gold trim.

In the commercial, box type modern, a compromise with graceful refinements was noted in the use of serpentine fronts, arched bases and simplified hardware. A new walnut suite especially designed with serpentine front and waterfall tops was reported by the manufacturer to combine the requirements of dealers the country over. Large double and triple beveled mirrors were an important addition to many of the suites.

Peasant Designs

Peasant designs of all description bid for popularity and such adaptations as Dutch, Scandinavian, Swiss, Mexican, French and Danish peasant were shown in oak, maple and birch, with quaint interpretations of their native origin. The peasant styles were confined for the most part to dinette and bedroom groupings.

While the French influence was noted to some extent on some of the more ornate English models, with such details as tabour trims on vanities, desks, etc., cameo drawer pulls and delicate carvings, the styles of the Louis remained for the most part in the background.

In its place Provincial French and some modernized Louis XVI pieces were shown—the only relationship to the French being in the outline of the cases and the details of the leg. One manufacturer showed a modernized French grouping in bleached and conventional finished walnut, and in fruitwood.

Kitchen Furniture

Kitchen furniture presented an entirely new aspect both in finish and styling. Round and oval kitchen tables with linoleum tops were shown with crystal white oak bases with red and maroon tops, and tawny oak with tan jaspe tops. Chrome bindings outlined tables edges and were complemented by chrome legs on tables and chairs. Wood grain linoleum was an interesting addition to some new models. Deep cherry red and marine blue added high style to decorative tables. A porcelain type finish on wood, baked on at 180°F., gave a glass like finish to some of the new tables, the new finish making the

"This is what the dealers asked for." So says the manufacturer of this vanity which is part of a walnut suite incorporating all of the important features requested by the dealers. The chest has a serpentine front, while the bed has plain paneled footboard and headboard.

tops stain resistant. Applied motifs on table centers were carried into the extension leaf on some of the new models. Solid colored porcelain tops in blue and in red on white bases were another new note.

Outdoor Furniture Colorful

Outdoor furniture used vivid colors splashed on sparkling white for dramatic contrast. Gliders, outdoor tables and chairs were shown in white with trims, upholstery and canopies of vivid colors. The Mexican influence was clearly defined on most of the outdoor furniture, stripes, Mexican figures and fiesta cloth adding spice to the ensembles. Steel wire

Chair and part of buffet in "Santa Vera" designed by Holabird & Root, architects.

mesh was used for gliders and trims on some of the new models and as side panels in solid metal pieces. An improvement in gliders was the substitution of a metal panel for the former cloth valance across the lower front part of the seat.

Rattan outdoor furniture, and wood shaped to resemble cane and rattan was a popular addition to summer ensembles. Nautical rope trims and canvass stretched across outdoor cocktail tables was an unusual variation.

An interesting market notation was the growing use of plant stands of all description, ranging from single stands to large fernerries. These were shown in all periods. Tables with receptacles for growing plants continued to gain in popularity and were shown in many novel treatments.

Coating Prevents Rust

A 4-page bulletin describing and illustrating the use of a chemical coating called Granodine to rustproof iron and steel parts by dipping or spraying before painting, has been prepared for distribution to the trade by The American Chemical Paint Co., Ambler, Pa.

Portable Mixer Bulletin

A new colorful 8-page bulletin describes, illustrates and gives specifications on an extensive line of motored portable mixers and parts manfactured by Mixing Equipment Co. Inc., Rochester, N. Y. Methods of using mixers are illustrated and described . . . . a valuable bulletin for any concern that uses or should use portable mixers.

Delivery of clean dry air from your compressor to the spray guns or other air-operated tools is of prime importance. Moisture caused by condensation in the airline and oil from the air compressor must be properly trapped and disposed of. These foreign agents, if allowed to remain in the air stream, cause blushing, spotty finish and off-color trouble. An efficient water, oil, rust and dirt separator prevents rust, dirt and other solids from entering the material stream and clogging the gun.

« Metal Cleaning Notes »

BY W. R. ALLEN

"CAREFULLY REMOVE all the oil and grease, fingerprints, rust, scale and other foreign substances, etc." This precaution is called to the attention of readers of finishing articles, not once, but as a rule many times, in any article that gives instruction about the application of paints or finishing materials to industrial products.

Several different cleaning materials and methods are available for cleaning metal parts and fabricated products preparatory to finishing or refinishing their surfaces.

When selecting a cleaning compound or solution for a specific cleaning problem, it is important to advise the manufacturers or their representatives (from whom you expect to purchase materials) regarding all details. In the first place, if mechanical equipment is used to clean the metal preparatory to the original finishing or refinishing, it is necessary to select scientifically balanced formulas of compounds or liquid solutions. If you select an alkali compound that contains tallow or animal fats, this material will have a tendency to form a jelly-like residue under heat, which will coat the inside of the coil tubes in the cleaning machine, reducing the space through which the solution passes. It will also have a tendency to gum the valves.

The practical solution of your metal cleaning work will depend upon several factors, such as the kind, condition and size of metal parts or products to be cleaned, your rate or volume of production and what equipment and methods you plan to employ. Your wisest course is to present all details to the engineering staff of one or more reputable concerns that specialize in the manufacture of cleaning materials and equipment.

The condition of the water should be considered because water conditions in different parts of the country require that specific water conditioners be added to cleaning compounds to produce desired results. These water conditioners eliminate scale of a metallic hardness which also clogs the coil tubes and valves. This is particularly true in southwestern United States.

If the cleaning operations are to be performed by hand, the ingredients in the compounds or ready-mixed liquid solutions should be such that they will not

harm or injure the skin and hands of workmen; yet they must be so formulated as to remove the oil, grease and other foreign substances from the metal.

Cleaning Compounds Formulated To Suit Specific Requirements

Frequently it is necessary and economical to clean metal in tanks by dipping, sometimes leaving it in the cleaning solution for a specified length of time. This process usually requires still different formulas and solutions.

A certain western manufacturer of alkali cleaning compounds has been successfully marketing products nationally because the company realizes that each specific cleaning problem requires a particular formulation and special service. The compounds manufactured by this company are 100% active and do not contain fillers or substitutes. They are scientific mixtures of the best and most modern chemical ingredients; contain no fatty acids or cheap oil soaps that break down under heat or hard usage; contain efficient water conditioners, eliminate offensive odors and are free rinsing.

One high-grade triple-soap compound recommended by the company is formulated from edible oils based on pure linseed oil; is made up of 22 component parts, and is especially adaptable for light cleaning of fine finishes preparatory to waxing, simonizing or polishing. The material is an excellent cleaner for aluminum, leaving the surface cleaned with a high luster, when used according to directions.

Another efficient formulation for use in a cleaning machine is balanced for the removal of heavy oils and greases. It contains one of the most powerful of all alkalies but is so controlled that it is harmless even to painted surfaces. This company also manufactures compounds for use in dipping or submersion tanks, and a general line of alkali compounds for all-purpose cleaning.

Iron Scale; Moisture Film

If the metal to be cleaned happens to be iron as it comes from the rolls, its surface will probably have a coating of scale consisting of compounds of iron and oxygen intermixed. If alkali cleaning compounds are decided upon for this job, consult a reputable manufacturer. If liquid solutions are to be used, select those with a phosphoric acid base, or those containing hydrochloric, sulphuric or nitric acid solutions. After the scale has been removed, the sheets should be subjected to a bath of slightly acidified water, which is intended to wash off the reaction products adhering to the metal.

All metal exposed to atmospheric influences becomes coated with a film of moisture which forms, even in dry weather, whenever changes in atmospheric conditions cause the air to become supersaturated with water vapor. Therefore it is necessary to exercise great care in cleaning the surface of metal so exposed, even though, to all general appearances, it does not show any visible signs of rust or deterioration. Wash these sheets with a phosphoric acid solution or properly blended alkali compounds soluble in water.

Cleaning and Etching Galvanized Iron

The cleaning and etching of galvanized iron or galvaneal presents

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still another problem. Viewed through a microscope, an etched surface on any kind of metal presents a mosaic patchwork of interlocking and close fitting grains which provides a "tooth" for the primer or enamel coats to adhere to. The most important raw material used in the galvanizing process is zinc. A phosphoric acid base solution is ideal for etching galvanized iron or galvaneal.

Wash-up thinners are used among many other cleaning solvents for preparing the surface of aluminum and aluminum alloys for painting. Alkali compounds are used successfully, but care should be exercised in selecting the right formulation. Aluminum or its alloys containing iron can be mated with compounds or solutions containing soda lye, followed by treatment with nitric acid solutions. The lye dissolves the aluminum and the nitric acid dissolves the iron, making the necessary etched surfaces.

Phosphoric-Acid-Base Metal Cleaner

A nationally known manufacturer is successfully marketing a phosphoric acid base metal cleaner which is prepared and shipped in a concentrated form, in lead-lined drums and glass carboys. The manufacturer recommends dilution in two to three parts water, depending on the condition of the metal. This particular material removes oil, grease, rolling compounds and other foreign matter. Due to the penetrative properties of its solvents, even when rust is not entirely removed, it penetrates into the pit holes and to the base of the rust, thus removing the rust entirely and preparing the metal for rinsing, drying and immediate prime coats or enamel as the case may require. It is also an excellent etching material. It will cut through and dissolve the hardened metallic surfaces, etching the surface of the active metals. It adapts itself to wipe-up, wash-off, dip process and spray application. It is non-inflammable; in fact, it will extinguish fire; it is non-injurious to the health and has no toxic effect.

Consult Experts on Cleaning

All manufacturers have cleaning problems but to write what should be written about them and what compounds and solutions to use would fill several books. Scientifically blended and balanced cleaning compounds and solutions, suited to the type of cleaning to be done, is the life work of experienced manufacturing chemists—not a pot-stirring amateur's job. A consultation with professional cleaners will help us all realize the truth of the American Paint and Varnish Mfrs. slogan, "Save the surface and you save all."

Bulletin on Unit Ventilators

Information about and illustrations of the exteriors and inter workings of late developments in unit ventilators, and pictures of many outstanding installations are attractively shown in bulletin S340, published by The Trane Co., LaCrosse, Wisc.

Alkyd Resins Booklet

A new illustrated booklet about Duraplex Alkyd Resins and their uses in bake finishes, air-drying finishes and nitrocellulose lacquers has been published by The Resinous Products & Chemical Co., Inc., 222 W. Washington Sq., Philadelphia, Pa. This 7x10-in. booklet has 16 pages bound between heavy blue covers and contains information of value to chemists and formulators of finishing materials and to the users of modern finishing materials in which alkyd resins are employed.

Making Varnish Tests

TO CHECK WOOD FINISH PERFORMANCE

BY C. J. BRANOLKE

Practical tests you can make in the finishing room to determine the suitability of an air-drying wood finish for use on certain products; tests that can be made on every shipment of material you receive to check its uniformity.

OCCASIONALLY I am asked, "What should we do about our varnish? It has worked fine until these last few shipments. Now it does not give us the desired finish." One inquiry came from a chair manufacturer. They were tempted to set up specifications as best they could, with the help of a chemical laboratory, and then open their varnish requirements to all bidders on this specification.

Now to set up specifications on say a low-priced outside spar varnish is difficult enough for an expert varnish chemist; but to do this with only the meager information furnished by a chemical analysis would be almost fatal. If this process is turned about, then some degree of success can be predicted for the resulting finish obtained.

It appears to me that today the varnish industry can meet all the requirements of any manufacturer who is earnestly seeking the best quality from reputable makers in the field.

This particular manufacturer is using a dipping outside spar varnish for finishing air-dried beech, birch and maple chairs. One coat is expected to furnish the finish required. In my estimation, the solution of this problem lies in the selection of a well known varnish maker—laying out the schedule desired, the finish required and the approximate price permissible from a cost standpoint. He will come to your rescue with proper recommendations for a material that will be as good in quality as the price permits.

After selection of the best varnish for the purpose at hand, it is up to the buyer to set his own standards for testing this varnish before it goes into production, so he can be sure that something other than the varnish is not causing trouble in any future faulty finishes.

We are all aware that variations in wood surfaces present great difficulty in the finishing department. Soft spots that are

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Binks SPRAY SYSTEMS

porous and do not sand smoothly, and numerous other faults, may be seen after the finish is applied.

Let us establish a standard testing method for the varnish that has been selected as satisfactory, and keep this method in use on every incoming new shipment of varnish for future use.

First, secure two gallons from the OK'd drum and fill pint cans. A fresh can of material will give accurate results whereas a full gallon, after being put to use in the tests, will take on body, skin slightly and dry differently than a fresh pint reserved for this purpose.

Testing for Viscosity

The importance of viscosity of the varnish cannot be stressed too much, and this feature should be our first consideration in determining comparable qualities of any two varnishes. The easiest way to test viscosity is by means of standard Gardner-Holdt tubes. Fill the tubes with the varnishes in question and allow them to come to a constant temperature of about 68°F. Then put the tubes side by side, invert them with a quick movement of the wrist and note the bubble rise in each. If they are alike within one quarter of a bubble, as the bubbles rise, then we can safely say the viscosity of both materials is practically the same.

Another method of checking viscosity is to use a Ford cup or an A. S. T. M. No. 10 cup. This method is the most accurate.

It is readily seen that if the varnish is, say, one bubble heavier in viscosity, it will deposit a thicker film on the work and will require more time to dry and harden to a tough surface. If the varnish is, say, one bubble thin or light compared with the standard, then it will flow off the work quicker and set up faster, thus resulting in a thinner film, with less fullness and luster.

Specific Gravity

The next important property to check is the weight per gallon or specific gravity of the varnish. If different raw materials are used in the manufacture, then the weight per gallon will be off. If the varnish was heated beyond the required time and in consequence excessive bodying of the oils took place, and then if to compensate for this added viscosity, it was thinned more than usual, the non-volatile or total solids will be less, resulting in less weight per gallon.

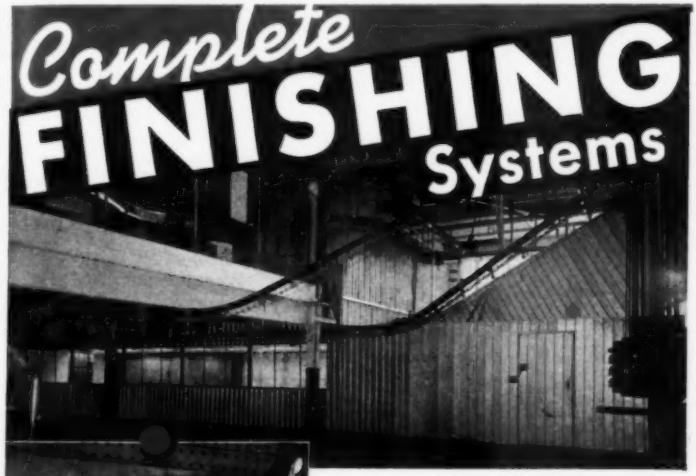
Our standard varnish weight per gallon is established by weighing a U. S. standard gallon measure filled to the graduated mark with varnish. An authorized gallon oil measure will suffice for this test. Any scale accurate to 2-oz. is satisfactory for this test. A difference of 2 to 4-oz. is permissible in the weight per gallon. The two varnishes should always be weighed at the same temperature.

The non-volatile content is important in any varnish. The percentage will vary from 45% to 55%. This test, however, requires expensive chemical balances, so it can be dispensed with if the weight per gallon checks. (Any chemical laboratory will run this test within 24 hours for a small fee.)

Tests for Drying of Film

We have now settled the viscosity and weight per gallon, so

Complete FINISHING Systems



Illustrations show parts of a Mahon System designed and installed for the Easy Washing Machine Company, Syracuse, N. Y., a typical Mahon installation.

. . for Every Industrial Need

No matter what your finishing problem is . . . no matter how large or how small your product may be, Mahon engineers are prepared to design for you a complete, properly coordinated system that will do a better finishing job at a much lower cost. In every industry where finishing is an important part of production, Mahon engineers have played the leading role in lowering costs through the development of more efficient equipment and advanced methods. You can profit by the widely diversified experience gained by Mahon engineers through years of research and development in this highly specialized field . . . let a Mahon engineer study your problem now — Write today.

THE R. C. MAHON CO.

DETROIT — — CHICAGO

Designers and Manufacturers of Complete Finishing Systems and many other Units of Special Production Equipment.

MAHON

if our varnish is tested for drying, we know that its working properties should conform to the standard, if the dry film is OK. Select a piece of window glass for the pour tests and be sure the surface is absolutely free from foreign matter or grease. Draw a line across the top about 1-in. from the edge, using a china marking pencil. Also, draw a line through the center, dividing the glass into two equal parts. Place the glass plate at an angle of 45°. Now pour exactly the same quality of varnish from each sample, pouring it over the glass plate from the top pencil line to exactly the center line. Thus we have the same area covered on each side of the plate. Allow it to drain, keeping the glass in the same position.

Set-to-Touch Drying

The first determination is the "set-to-touch period" for each varnish. After about 20 to 30 minutes the varnish films will begin to set, close to the top of the glass plate. Place one finger above the top pencil mark on the uncoated part of glass and move this finger down over the varnish film lightly, coming to a stop at the spot where the varnish is still wet. Now press in firmly, thus printing the varnish at this point. Do the same with the other varnish. The finger print marks should match as you test the dry film down the glass to the bottom portion. If one varnish is slower in drying than the other, it can be expressed in terms of "1-in. slow," or the reverse, as "1-in. fast."

About one quarter of the way down can be taken as the "set-to-touch" time. Recordings can be made with a photographic timer. This will vary from one to two or three hours, depending on the oil length of the varnish being tested. (A 40-gallon wood-oil Bakelite-ester gum varnish will set in two hours.) After the setting time is noted, the varnish will require 7 to 12 hours to harden to a tough film.

Dry for Print Test

Next morning a print test can be made at about 2-in. from the top of the glass plate. Place a 1-in. square piece of felt on each varnish film and weight it down with a 2-lb. weight. After two hours, any printing of the surfaces can be noted. This will indicate the hardness of the new batch in comparison to the standard. A knife test or finger-nail test will indicate the comparative hardness.

Additional tests can be made for color and for water resistance. Color can be ascertained by viewing the two varnishes in the Gardner-Holdt tubes in bright daylight. Any cloudiness or excessive color change can be easily seen.

For the water-resistance test, it is always best to flow out films on additional plates. After the films are thoroughly dry, place the test plates in cold water. Also, make one test in hot water. Immerse about one-half of the glass, allowing the top portion to remain dry. Any whitening of the film can be quickly noted. Also, you may notice whether or not this white clouding will dry clear and free from any haze. Many good varnishes will show a cloudy effect while in the water, but will dry clear as crystal after being withdrawn.

"Skinning" Test; Reduction with Thinner

A "skinning" test is essential for all dip varnishes. The rate of skin formation should be noted. Place an equal quantity of the two varnishes in the same kind of container, and allow them to stand without any cover until signs of a skin formation is seen.

Most dipping varnishes are reduced with petroleum solvents prior to application. Also, upon evaporation in the tank from day to day, additions of solvent are necessary. Much agitation causes excessive evaporation. This, in turn, causes considerable oxidation, tending to change the working properties somewhat. If this can be approximated in a small way, then we can be sure of the same working properties in the large tank.

Reduce the two varnishes with the same reducer that is used in production, to a point where the sample shows a distinct clouding or kicking out of solution. If the new material will stand this amount of reducing, with the same effect, then it can be considered OK. (A better test for this property is the Kauri Reduction Test, but this requires much manipulation and standardization of solutions for accurate results.) Allow the precipitates to settle and observe the difference, if any.

Gas-Proofness Test

One more test that would possibly influence the acceptance of a new material, is to check it for gas-proofness. Sometimes, when wood-oil varnishes dry in a closed room, lacking ventilation, a frosted effect will appear over the surface of the varnish. Place a freshly poured plate of the two varnishes under a hood or bell jar and allow the films to dry overnight. Note the difference in the luster or any frosty crystals, which will show it to be not gas-proofed. Repeat this same test, but expose the fresh varnish pours to a current of air from an electric fan. Sometimes this treatment will cause a frosted appearance also; about 3 to 5 hours will show up any dulling of gloss or frosting.

If tests such as those enumerated here are carefully made, the certainty of exact duplication of finishes on all jobs will be predictable—if the wood is in the same state of dryness, and the surface is satisfactory.

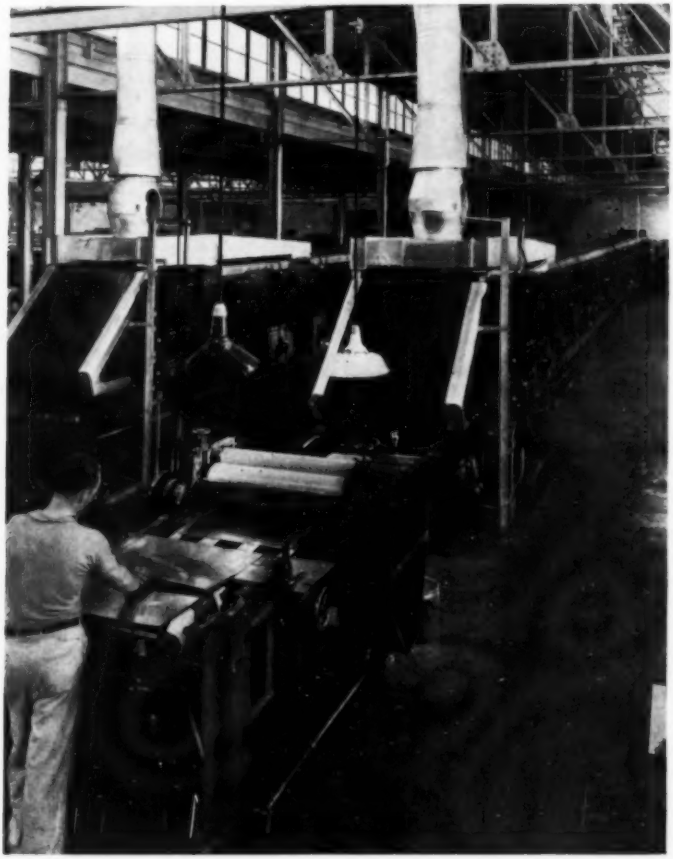
These tests have been simplified considerably so they can be made in an ordinary finishing department, without undue expense and time-taking effort. After all, the varnish maker's laboratory is the best place for these tests to be carried to the nth degree, and it is well to remember that whatever we do in the way of testing, the finish manufacturer has already taken great care to insure exact duplication of every shipment, using elaborate equipment that would be almost impossible to install in any furniture factory.

Hilo Sales Conference

Industrial salesmen of the Hilo Varnish Corp., held a sales conference December 29, 1938, at the Hilo office and plant, 42-60 Stewart Ave., Brooklyn, N. Y. Dr. Mattiello, Technical Director, presided over the meeting at which various officers outlined the factory, laboratory, credit and marketing policies for 1939. During the meeting members of the Laboratory Staff discussed several new products, recently formulated. After the business meeting, the entire group was entertained by the President, Mr. Carl J. Schumann, at his home.

Lithographing Tin Plate

Below, an operator is feeding metal sheets into a roller-coating machine from which they are carried forward by conveyor through a special gas-fired oven.



Sheets in Modern Plant

BY EARL E. GRAY

Vice-President & General Manager
Caspers Tin Plate Co.

Revealing the modern production process of multiple color printing and decorative finishing on flat sheets of tin plate, which are later formed into products such as bottle caps, containers, candy boxes, toys, display stands, advertising novelties, signs, etc.

■ ■ ■

WHEN YOU pry the crown from a beverage bottle or unscrew the cap from a jar of preserves, you probably do not realize how much scientific and technical skill has been required to make it. If it has protected the contents, if it is found tight but yields under proper effort and if its design and colors are attractive, you may give its entirety a thought. This service has come a long way to serve you.

Tin plate is sheet metal that has been coated with tin. It still is known under the heading "coke" and "charcoal" plates, taken from the methods by which the iron was made. Charcoal plates were the better and so received a heavier coating of tin. At the mill the large sheets are reduced to the size which allows greatest economy in the fabrication of the device for which they have been ordered.

The design to be lithographed is either in the form of a drawing or a colored photograph. In either case, it has to be etched upon a zinc plate from which it will be printed. But consider, now, how to duplicate this design in multiple so as to get the most blanks out of a sheet with the least waste. Duplication must be accurate within .001-in. because generally sheets are fed through automatic presses and the design must coincide exactly with their feed spaces. Also, the lithographer may be required to send a sheet through the press as many as nine times to complete the color scheme, and colors must register with a variation not to exceed a hairline.

Foremost among the metal decorators today stands the Caspers Tin Plate Co. of Chicago, Ill. This company really fulfills a service function as a middle agency between the makers and the fabricators of tin plate. Its business is to lithograph upon the metal and for this purpose it now is the proud possessor of the most modern, and probably the largest, plant in the U. S. devoted exclusively to commercial lithography on metal.

The company's new building, opened formally on June 19, 1937, contains 112,000-sq.ft. of ultra

modern construction. All corners of the building are round and this feature has been combined with continuous fenestration to produce a pleasing streamlined effect. At the rear, a warehouse section, 88x232-ft., well sky-lighted, can accommodate 10,000 tons of stock steel sheets.

Production Units

The main plant lies spread out so plainly that one absorbs it at a glance. Wonderfully lighted, the plan of production needs no careful elaboration. One side production bay consists of two spot coating units, two plain coating units and one coater now under construction. Each of these units is directly connected to a gas-fired drying oven 125-ft. long. These ovens are of special design and were originated by Caspers Tin Plate Co.

Tin plate sheets, after passing through the coating machine and being coated in various colors on one side only, are conveyed directly into the drying oven where each one is picked up on a continuously moving conveyor perfectly synchronized with the coating unit and conveyed through the oven. The baking cycle on these ovens can be varied from 14 minutes to approximately 23 minutes, depending on the finish being applied and the speed at which the unit is operated. Temperatures at which these units operate run all the way from 200°F. to 550°F., and are accurately controlled electrically by elaborate pyrometers. The accuracy at which temperatures are maintained can best be seen when we realize that through the 115-ft. covered section of the oven, any given temperature is held to a tolerance of plus or minus 3°F.

The center production bay consists of five press lines for high speed continuous operation, each line being equipped with an automatic sheet feeder feeding the sheets into a special gas-fired drying oven 95-ft. long, similar in design to those used on the coating lines.

The remaining bay consists of one metal decorating press reserved for heavy duty work and three presses for small runs and general jobbing work. These are hand fed and are also connected to specially designed gas-fired drying ovens.

These units are the production tools of Caspers' business through which tin plate and black plate sheets must pass to have their coverings of paint, ink and lacquer baked into resistance against fabrication. These sheets, it must be remembered, will be formed into all manner of shapes and devices—cans, bottle caps, candy boxes, toys, advertising display stands, signs, spray guns, spiral bindings, paint pails and containers, advertising novelties and other things to which lithographed metal lends itself so practically.

Caspers operate their own art and complete plate making department. This is one of the finest and most modern in the whole country. Two precision photo composing machines, a precision camera with motor operated negative holder, two vacuum printing frames, plate whirler and a new motor operated proving press make up the mechanical equipment in this all-important department.

Print by Offset Method

All printing in the plant is done by the offset method. Upon completion of preliminary art work

Discharge end of one of 15 special drying ovens through which plates pass on edge.

and after the printing plates have been produced in the plate making department, the next step is the producing and matching of colored inks, lacquers and coatings. This is a very important step when we stop to realize that most nationally known manufacturers have spent millions of dollars to keep their product before the public and familiarize people with a certain trade mark. Without our realizing it, the outline and color of this trade mark has a great deal to do with our recognizing it and asking for a par-

ticular brand when we buy. After the colors have been mixed and matched by proofs, the plate is affixed to the press roll and registered to the sheet size, and production can begin. Usually designs are furnished by the customer and colors are specified, but sometimes Caspers is asked to submit sketches for approval. Consequently an artist is employed regularly both to finish rough drafts and to originate new designs.

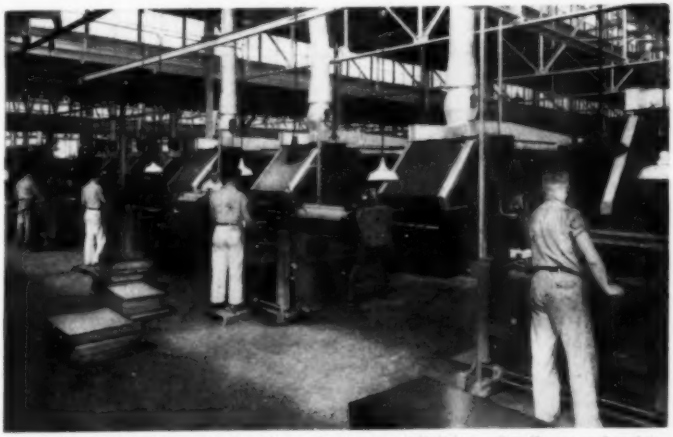
Material Testing; Color Matching

The matter of colors, inks, paints and lacquers is one whose significance would not be readily apparent to one not familiar with this work. Their selection and preparation is a laboratory problem which can be very complex. These tin plate sheets, bear in mind, eventually are in contact with all sorts of foods, oils, liquids, cosmetics and powders which may react chemically in many ways, perhaps disastrously to the product or to the person who uses it.

Tests are in progress continuously to prove the fitness of coatings applied. These sheets of colored designs, also, have to be proof against the stresses of fabrication. It is one thing to coat a sheet which will remain flat, but quite another to make the coating sufficiently durable to withstand the processes of forming and the test of weather and display. The laboratory also analyzes all purchases of these materials and files samples as evidence, should claims arise because of some later failure.

Accuracy in matching colors is another of the labors of achievement which the lithographer on metal must bear patiently. Great

Sheets passing through one of the high-speed automatically-fed press lines.



View along the main production line. Notice good lighting, cleanliness and safety.

care is taken to preserve the formulas whereby delicate pastel shadings are compounded. One package off color can spoil the entire effect of a display. Today, color plays a leading role in the drama of merchandising. It is not sufficient to say pink or purple, for any color one could name is subject to an almost infinite range of shade interpretation. Not only are formulas tabulated scrupulously for reference in the case of repeat orders, but actual samples of the mixtures are filed for future check.

A clever bit of adaptation is a feature of the ink room. Caspers does not grind inks but has to mix the prepared pigments to match samples. Rather than the cumbrous equipment usually employed, since a batch of 10-lbs. is a practical maximum, an ordinary Kitchenmaid mixer was tried and proved to be geared exactly to the job. Three of these devices, fitted with special steel hooks, equip the ink room both competently and economically.

Importance of Baking Ovens

What the physical and chemical laboratories and the paint and ink rooms prescribe not only must rule the work turned out by the coaters and presses but the ovens as well. No less important in the evolution of a finish which will bear up under fabrication and service conditions is its heat treatment. Each sheet must pass through a gas-fired oven which hardens its finish under closely regulated and predetermined temperatures.

Sheets are handled through the ovens in a vertical position by chain conveyors which carry about 2,000 of the light frames known as fingers. These conveyors are synchronized in speed with the presses so that a sheet is fed from the printing rolls to each finger. The sheet slides horizontally upon the finger and then,

as the conveyor passes over the end sprocket, it is turned up into the vertical position which it retains during passage through the oven. Presses and conveyors have separate motors, so a press can be shut down while its conveyor continues in motion until all sheets have been cleared from the oven.

Air introduced into the ovens first is filtered to extract any dust. Ventilators at the entrance hood of each oven, and fans spaced along its length, remove any vapors. The distance between sprocket centers is greater than the length of the oven to allow for a cooling interval at the delivery end. Here, also, between the conveyor runs, are motors whose fan blades blow air up through the sheets to cool them further before they are lifted off the conveyor by hand. Sheets that show defects under inspection are boiled in a caustic solution and washed to reclaim them for use. Before they are packed for shipment the sheets are passed through spray machines which give them a light coating of paraffine wax to act as a lubricant during subsequent fabrication.

To see these bright sheets handled individually is to credit them with lightness quite at odds with the facts. Stack them in ever so low a pile and their weight becomes formidable in no time; a ton of this metal looks like no more than one man could handle. Accordingly, lift trucks are used for all stock movements, and sheets are kept on skids excepting only during their run through the units. In finished storage they are kept in vertical position to prevent any possible offset. For shipment they are packed on what

Small section of the tin plate warehouse.

are known as pyramids—triangles either of wood or steel on skids, against whose sides they are strapped. Caspers has 1,200 of the steel pyramids for customer service, which, like steel drums, are returnable.

One of the outstanding developments of the past year has been a new method of finishing zinc alloy die castings that combine both color and plating for final effect. Heretofore it has been customary to plate such castings and then use an air-drying lacquer for the color. The adhesion of air-drying lacquers, when applied directly on zinc alloy die castings, is notably poor.

By the new method referred to, we have produced a synthetic baking enamel that is perspiration resistant and can be put through the ordinary plating solutions without harm. It is now possible by the use of this baking enamel to first spray the entire part, bake and then buff the highlights which are to be plated. The piece is then put in the plating tank and the plate deposits only on the highlights.—290.

Spray Painting Classes

The DeVilbiss Co., Toledo, Ohio, announces the schedule of their training school for the first half of 1939. This school is open to industrial painters, master painters, automobile refinishers, and all others interested in learning the technique of spray-painting, and the use and care of spray-painting equipment.

The training period lasts for one week. Classes will start on March 13, April 17, May 15 and June 5.

Special rates in Toledo hotels and boarding houses near the plant have been secured by the company for men attending the school.

These classes have been well attended in the past because of the facilities for study, otherwise unobtainable, offered by the DeVilbiss Laboratories.

It is advisable to enroll in the school as far in advance as possible, since the size of the classes must be limited and since there will be no training periods other than those announced.

Berry Bros. Sales Convention

During the last week of December, 1938, Berry Bros. held a successful 4-day sales convention at the Detroit headquarters of the company. Sessions were held in the Assembly Hall of the Company's Administration Bldg. which stands almost on the site of the original frame building that the Berry Brothers, Thomas and Joseph, built more than 80 years ago, and in which they first made varnishes.

Interesting talks were given by executive Vice President J. B. Bond; Secretary-Treasurer, Fred L. Colby, grandson of founder Thomas Berry; Thomas Berry Colby, another grandson and now Manager of the Aviation and Marine division; S. J. McGrath, new Technical Director; Gale Smith, Chief Chemist; C. E. Spooner and H. Muehlbeck, respectively Manager and Assistant Manager of Industrial Sales; and Geo. H. Wadham, Assistant Manager Trade Sales Division.

Jack D. Greene, recently promoted to the post of advertising manager, opened the second day's sessions with a presentation of a comprehensive new advertising program, which includes novel and colorful display material, signs, literature, novelties, publication advertising and cooperative advertising. In connection with this material, Mr. Greene announced the new Berry Bros. seal and slogan, "Sky-Tested Quality," which is to be used to advertise all Berry Bros. products.

"Dave" R. Anderson, Manager Trade Sales Division, discussed sales, merchandising problems and practice, and introduced the sales force to their new sales kits. Mr. Anderson was followed by Technical Director S. J. McGrath, who conducted a technical question and answer clinic.

The Canadian branch of the company's activities was represented by a large delegation under the leadership of Bruce B. Tudor, Canadian Manager. Berry Bros'. extensive Foreign Trade Division was represented by Export Sales Manager, Miss A. M. Bookmyer who was accompanied by a guest, Senor Rafael Rojas, Berry Bros. general sales representative for Colombia, South America.

Executives and salesmen in Trade Sales Division of Berry Bros., Inc., Detroit, Mich.

REVIEW OF
The Latest Equipment

THE YEAR 1938 was one of great achievement in the development of new and improved equipment, tools, accessories and supplies for use in the finishing departments and paint shops of various types of industrial establishments. For the larger high-production departments of industry, metal cleaning and drying machines are often linked in tandem with automatic machines for applying coatings by spraying, flow coating, dipping or roller coating—followed, in many cases, by continuous conveyor ovens for baking or high temperature drying.

Where factory production includes large quantities of parts or products of standard size and shape, the cleaning, coating and drying can be performed entirely with mechanical equipment that works automatically and safely and gives definitely uniform results. Practically every item included in this type of high-production equipment has been improved. Several manufacturers of different types of finishing equipment have concentrated on engineering developments along these lines and they have made remarkable progress.

Improvements have been made in water-wash spray booths, ventilating fans, spray guns for various specific purposes, material and air hose, mixers, containers, whirling machines for coating small parts, striping tools, flock finishing equipment; sanding, rubbing and polishing machines, portable spray outfits, air filters, air separators and air regulators.

Air-conditioning systems have been installed in more finishing departments in order to supply clean fresh air and maintain a uniform temperature, humidity and circulation

for the Finishing Room

at all times. This helps to produce cleaner smoother finishing . . . . gives more uniform results, with the possibility of spoilage or rejects reduced to a minimum.

More different types of grain reproduction equipment and methods have been developed.

A few additional highlights are:

1) Greater efficiency in paint-circulating systems wherein finishing material is delivered to spray stations through pipe lines.

2) A high degree of perfection in automatic reciprocating spray machines for finishing flat ware such as range parts, refrigerator parts, leather, insulation materials, artificial tile, etc. One concern is using a reciprocating-arm spray machine for producing a hammered effect on flat ware with one trip through the machine. The reciprocating arm has two guns mounted at opposite ends of the air manifold. The first gun applies a bronze or aluminum finish coat in the usual manner and the second gun immediately stipples the finish surface with thinner. The result is a most attractive finish that has the appearance of hammered metal. This double action can be obtained because the ware travels on a conveyor; the bronze coat is applied first and the ware travels along to the second gun which applies the stipple coat.

3) The development and use of large nozzles on spray guns for spraying sound deadener and other heavy materials.

4) A tremendous interest has developed for flocking equipment. There seems to be no limit to the possibilities of this "dry paint" with its soft suede-like finish. An auto-

matic high-production flocking unit, supplied to one of the large manufacturers, automatically applies binder and flock, and automatically collects and uses all excess flock.

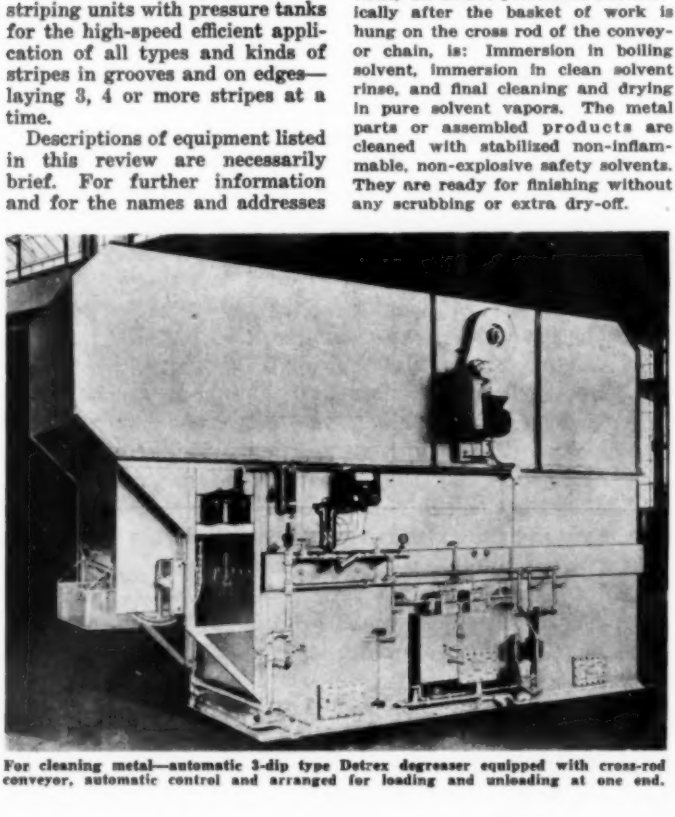
5) The almost universal adoption of fine wet-or-dry sandpaper in connection with portable sanding machines to smooth out finished surfaces. Wet-or-dry sandpaper seems to be replacing pumice stone for this work.

6) The use of high-production striping units with pressure tanks for the high-speed efficient application of all types and kinds of stripes in grooves and on edges—laying 3, 4 or more stripes at a time.

Descriptions of equipment listed in this review are necessarily brief. For further information and for the names and addresses of manufacturers, write, wire or telephone INDUSTRIAL FINISHING, 222 E. Ohio St., Indianapolis, Ind., or send your inquiries to this office to be forwarded.

Conveyorized 3-Dip Degreaser—Here is a new conveyorized 3-dip degreasing machine for removing oil, grease and dirt from all kinds of metal parts, such as stampings, castings and screw-machine products prior to painting or finishing.

The sequence of cleaning operations, which are performed automatically after the basket of work is hung on the cross rod of the conveyor chain, is: Immersion in boiling solvent, immersion in clean solvent rinse, and final cleaning and drying in pure solvent vapors. The metal parts or assembled products are cleaned with stabilized non-inflammable, non-explosive safety solvents. They are ready for finishing without any scrubbing or extra dry-off.



For cleaning metal—automatic 3-dip type Detrex degreaser equipped with cross-rod conveyor, automatic control and arranged for loading and unloading at one end.

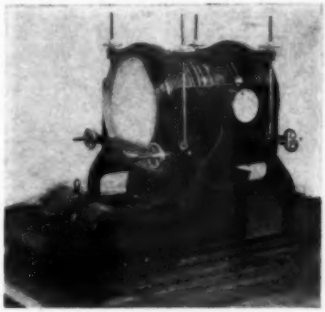
While this design of machine is built in several standard sizes, the particular unit shown accommodates work up to 36-in. long, 15-in. wide, 15-in. deep and 20-in. hanging. The approximate overall dimensions of the degreaser are: Length, 12-ft.; width, 6½-ft.; height, 10-ft. It has a total solvent capacity of 250 gallons, and the approximate weight is 6300-lbs.

This automatic machine is equipped with a return-type cross-rod conveyor designed to load and unload at one end and with return flight of conveyor in upper hood. Cross-rods, from which baskets of work are hung, are spaced at regular intervals along the 2-strand conveyor chain. The ¾-hp. motor drive, speed reducer, and variable-speed are mounted on the upper hood, and drive the conveyor chain through a "through-shaft" and sprockets. A conveyor chain take-up device is located on sprockets at entrance-exit end. Oilless bearings are used on all sprockets inside the vapor zone.

Paint-Drum Agitator — A machine for violently agitating the contents of paint or enamel containers (before opening same) to restore into proper solution any settled or caked pigment. Five sizes handle containers from the smallest size to 50-gallon drums.

The Miracle Paint Rejuvenator is a self-contained motor-driven machine with quick-acting clamps for clamping and holding the container firmly. It is not a "paint shaker" but is scientifically designed by skilled engineers to develop the proper motion within the container to enfuse the paint ingredients properly and quickly; designed to concentrate the motion into the container, thus reducing vibrations of the base. The machine is equipped with ball bearings; its entire moving mechanism is encased in a sealed reservoir of oil, assuring silent operation.

Machines of this type are giving excellent results in the industrial field. One company, after one year's

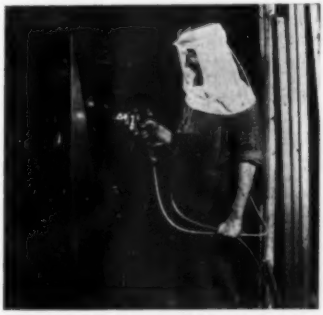


Weight, 3000-lbs.; motor, 3-hp.; capacity, one 50-gallon drum.

experience with the machine, declared that they had saved 60% of the cost of handling and preparing their paint products before placing same in the paint-circulating system. Their greatest saving was in the heavier pigmented coatings.

Helmet-Type Respirator — A new helmet-type respirator especially adapted to overhead and outdoor paint spray work; protects head, neck and shoulders; light in weight; easy to wear; muslin hood is attached to cap and fits snugly over the shoulders. Has large pyralin window, easy to clean.

Cap has air connection at back. By taking off a T at the air connec-



The operator is completely protected.

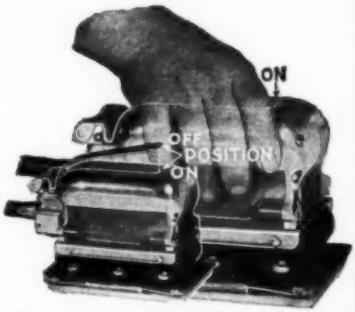
tion to the spray gun and by using an air adjusting valve, a small amount of air can be brought into the helmet by means of a small length of hose. Air thus brought into the mask pushes downward and out, thereby keeping outside fumes from the operator.

Airconditioning Unit—The separator supplied in connection with this airconditioning unit has proved to be remarkably efficient in removing all water, oil, dirt and foreign matter from the air line. It has no packings or parts needing replacement, but keeps clean automatically as the air valve is opened. There is nothing to wear out, replace or adjust. There are no filters to insert.

Cleans compressed air at booth.

The unit has a new type of mesh wire arrangement instead of brass coils, and no dirt, oil or foreign matter can pass through this unit and again enter the air line. Double protection is provided by special air inlet slots in the outlet tube.

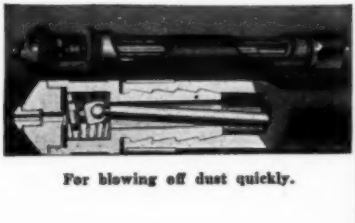
Speed-Bloc Sander — A portable pneumatically-operated machine for: 1) sanding bare wood or metal; 2) sanding prime coats, sealer coats or under coats—sanding dry or wet; 3) feather-edging finished surfaces for repair finishing; 4) rubbing or smoothing finish coats, and 5) polishing or buffing finish coats. The reciprocating motion of the block duplicates hand motion at greatly accelerated speed, hence the machine saves time and hand labor on a variety of operations in large and small shops. Its flexibility makes it adaptable to work on curved surfaces as well as flat surfaces. Recent improvements incorporated in this machine make it more nearly foolproof, more easy to handle, more efficient and economical in performance, and less likely to get out of order when used under conditions of severe service.



Portable power sander, rubber, polisher.

A new automatic valve control, available as an added accessory, automatically starts and stops the machine and controls the flow of water when the water hose is connected for wet sanding or rubbing.

Air-O-Chek Valve — For concerns that use compressed air for blowing dust from surfaces to be cleaned or finished, a new Air-O-Chek valve unit that screws on to the hose is announced. This handy air valve has the unique Air-O-Chek ball-and-socket joint with enclosed actuating lever which eliminates protruding buttons or levers, as well as packing



For blowing off dust quickly.

glands. All operating parts are shielded within the valve and air hose. A slight pressure between thumb and finger to flex hose gives a big free-flowing volume of air, with instant positive shut-off when the hose is released. It is furnished with either male or female fitting for conveniently attaching to and removing from hose; made of bar brass and stainless steel for 1/8, 3/16 and 1/4-in. hose. A variety of nozzles are available for different types of work.

Material Strainer for Spray Guns—Fits on the material inlet of standard production spray guns for straining the paint which is being delivered to the material inlet of the gun. This type of strainer is the last cleaning

Strains finishing material at gun.

agent to remove any foreign matter which might have been picked up in the hose or the circulating pipe lines. The strainer has a 250-mesh screen, which can be easily removed for cleaning.

Flock Spraying Outfit—A combination flock-reclaiming and adhesive-coating booth, pressure flock tank, and flock spray gun. Binder is applied in the right-hand section and flock is applied and reclaimed in the left-hand section. The booth is made of 22-gauge steel panels electrically welded to a heavy angle-iron frame, and is easy to clean. The air-distributing plates are readily removable, and provide a uniform flow of air throughout both sections.

To prevent any possibility of sprayed flock from scattering around the finishing room, there is a special removable curtain at the front of the flock section. The collector screen at back of flock-reclaiming section rests on expanded metal. Excess flock drops from the collector screen into the flock collector where it is reclaimed for use again. Safe ventilation is assured by the fireproof ventilating unit.

The material pressure tank is made of one-piece pressed steel, fully galvanized. Its easy-opening easy-looking clamptight cover may be removed and replaced in 15 seconds. An even flow of flock from tank through hose to spray gun is assured by the special indexed control agitator and flock-circulating head which provides whirling and downward air currents to keep flock properly agitated, and directs flock into opening of hose so that it is carried out with air to the spray gun; there is no possibility of clogging.

The flock spray gun is light and easy to handle; the 2-finger trigger accurately controls the flow of flock; all parts are made of brass, heavily chromium plated, except the alu-

Complete outfit for spraying flock.

minum handle. This gun will operate continuously at high speed without any possibility of clogging. Flock enters the spray gun at the handle and passes directly to the multiple-head which is readily adjustable for either round or wide fan spray. Eight cubic feet of air per minute and 25 to 40-lbs. airline pressure are recommended.

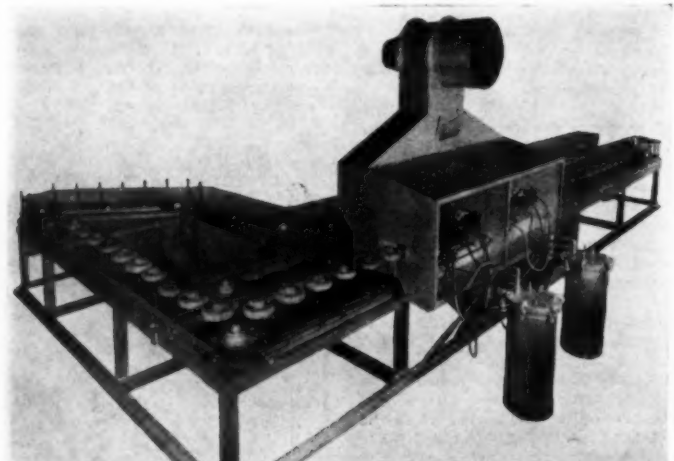
Automatic Spray Painting Machine (F3702A) — Equipped with an L-shaped conveyor . . . . for spray painting motor ends; used in conjunction with continuous type drying oven. Has dual spray stations for applying primer and finishing coats. Has 158 rotating spindles designed so that the spray guns coat only when loaded spindles enter the ventilating booth. Production is 24 motor ends per minute when conveyor is operated at average speed of 18-ft. per minute. This unit is producing outstanding results in the plant of one of the foremost motor manufacturers in this country.

Air-Operated Agitator—An air-motor operated agitator known as the Pneumix Type B, to handle batches of material up to 100 gallons; is sparkproof and cannot heat. This feature is of particular interest to the handler of inflammable organic compounds and solvents.

Speed of the pneumix is variable—from 30 to 6000-r.p.m., requiring from 5 to 50-lbs. pressure. Speed is controlled by the air intake on the motor. This is an important item where there is a change in viscosity of material during the mixing operation. Quiet operation is assured by a muffler in the exhaust line.

Splash-proof performance has been provided by having the two propeller blades "throw" toward each other. The entire construction is so designed that all internal working parts are protected against any splashing or dripping. The upper propeller is removable, so that the unit can be used on smaller quantities of material.

The shaft is available in chromium plated steel, stainless steel or bronze;



Two complete spray stations in separate booths, and rotating spindles on conveyor.

Over-all size of the Pneumix Type B, is 40x6-in., and its weight is only 17-lbs.

Silk screen plates are being used more extensively than ever before. Manufacturers of all types of furniture and many other products recognize the value of this method of printing and decorating their products. The designs used vary from decorations to improve the appearance of the furniture, to small fine-type serial and patent numbers. Through the use of photographic plates, designs of intricate detail and small lettering may be used. Practically anything that can be photographed may be printed with the silk screen process on a flat surface.

the blades in chromium-plated brass or stainless steel. Parts made of other materials can be supplied on order. Shaft is removable so that it can be replaced with another of a different metal when a change in material requires it.

Viscosity Meter—Here is a viscosity meter that operates on the principle of electrically recording the interval of time (usually in seconds) required for a metal ball to fall a specified distance through the liquid being measured for viscosity. Features of this instrument are:

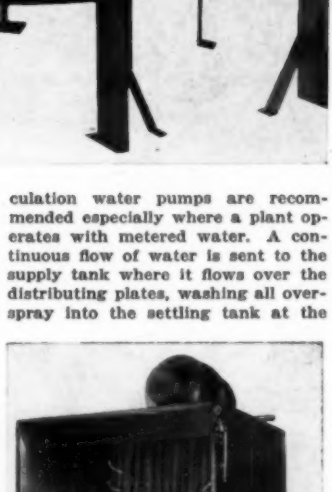
1) Electronic indication may be used with opaque liquids of any kind. 2) Range extended to cover from 75 to 1,000,000 centipoises. 3) Interchangeable tubes; any number of samples may be tested quickly without cleaning tubes. 4) Balls of various sizes (5/16-in. to ½-in.) and various specific gravity (1.2 to 10) can be furnished. 5) Accurate positioning and release of balls. 6) Time required can be varied to suit. 7) Special tubes can be furnished which permit easy removal of balls.

Modern "falling ball" viscosity meter.

Power Graining Machine—For reproducing wood or marble grain on surfaces to be finished. This machine has a cycle time of 30 seconds and will pick up any part of the pattern in a plate and will print it with accurate registration on any part of the piece being grained. By properly masking a surface and then laying it on the table in a diagonal position, it is possible to produce either a "V" or diamond match from a straight-line plate. The machine is completely gear driven and is equipped with an attachment for cleaning the roll.

Water Wash Booth (F878) — Provides a continuous curtain of water which effectively washes down the over-spray that ordinarily accumulates on the air distributing plates, and prevents solids from accumulating on the rear wall of the booth, ventilating fan and exhaust piping. The amount of solids that penetrate the water curtain are negligible and are so thoroughly water saturated that risk of fire is automatically eliminated, thus making it possible to obtain lowest fire insurance rates.

These booths are supplied with or without circulating pump, but for economic reasons the centrifugal circulation water pumps are recommended especially where a plant operates with metered water. A continuous flow of water is sent to the supply tank where it flows over the distributing plates, washing all overspray into the settling tank at the



Booths are made of heavy gauge galvanized sheet iron, electrically welded to angle-iron frames.

bottom of the booth. The outlet to the circulating pump is provided with a removable fine-mesh cylindrical strainer to prevent solids from passing to the pump.

Self-cleaning booths of this type can also be made with water curtains on the sides as well as at the rear, to further reduce cleaning costs and fire hazards.

Shel-Matic Spray Gun—"The result of 30 years brilliant engineering progress and has been 4 years in the making." Drop-forged of a special duralumin alloy, combining light weight with rugged strength. Chassis is effectively enclosed to prevent abrasive accumulations around important working parts. Nozzles are of heat-treated ground steel and specially processed bronze; working parts are of stainless steel, heat-treated steel and bronze to insure long life. Great speed and atomization characterize the gun nozzles for industrial and automotive service.

The gun has a straight gliding trigger with ample room for two fingers; trigger glides back into the handle; air is automatically circulated through the gun before the material, thereby affording smooth starts and stops. Needle and air valves float freely, pulling back and forth in a straight line. Friction between nozzles has been reduced to a minimum. Spray head assembly revolves as one unit. Nozzle misalignment, due to wearing of bearing between nozzles, is eliminated.

Perfectly balanced, its scientific rounded handle and smooth-gliding trigger all mean effortless, tireless operation.

Precision adjustments permit use of this spray gun under widely varying service conditions and with almost any type of finishing material (with proper nozzle assembly). Material control quickly increases or decreases the amount of material sprayed in proportion to amount of air. It is useful in applying light or heavy coats, and obtaining dryness or wetness of spray, and in controlling width of fan-shaped spray. Nozzle adjustments are simple and fool-proof. Fan, round and intermediate sprays are obtainable instantly by turning nozzle to right or left.

The covering and cup assembly are

The continuous type conveyor oven is most economical where production requirements are high and the work uniform. An unlimited variety of designs can be furnished. A typical system of this kind includes a conveyor passing continuously through a loading station, a dipping or spraying station (automatic or manual) then into the oven where the finish is baked, emerging cooled and ready for unloading or further processing. The proper application of this equipment involves numerous engineering problems. Oven engineers, through the experience gained in designing and constructing many of the largest installations, are particularly well qualified to furnish impartial recommendations for a satisfactory installation. Views of many installations are illustrated in the catalogs of leading oven manufacturers.

made of a special aluminum alloy which combines extremely light weight with great durability; has a breather hole turret designed to prevent leakage when gun is tipped up or down. The gasket is of a specially developed solvent-proof compound and is easily replaced. Quick detachable cup bail is dependable in action, easy to operate and eliminates accidental breakage of cast clamps and bolts.

Air Dusting Gun — Designed to meet the demand for a more compact, lower-priced duster. This improved gun has an air capacity equal

For blowing off dust quickly.

to that of a large standard model duster, yet is small enough to be held completely within the hand.

The gun is quickly and easily operated by simply closing the hand around the gun in any reasonable position, and squeezing the one-piece thumb button and valve stem located in the middle of the gun body. An opening is provided in the zinc die-casting body for hanging the duster on a hook when not in use. A removable brass nozzle is threaded into the gun body.

High pressures direct from the main air line or lower pressures may be used in operating the duster, which has an air consumption of 13-cu.ft. at 80-lbs. pressure. New straight line design puts the nozzle practically in line with the air hose, permitting use of the tool in close quarters without kinking or bending the hose.

Exterior parts of the gun are dull nickel plated, rounded to fit the hand comfortably. Air valve spring is cadmium plated to prevent rust.

Pressure-Feed Spray Unit—A small pressure-feed spray unit, available in 1-qt. and 2-qt. sizes for use with any spray gun. This unit fills the gap between the cup gun and the full-size spray unit; has all the refinements of control and adjustment found in larger units—pressure regulator, air gauge, shut-off valve on air supply, 3-way release valve and

Can be attached to or separated from gun.

It has been found in actual practice that the cost of solvent and labor for cleaning a standard 10-ft. spray booth amounts to more than $200 per year. Considering that each year during the life of the booth, this item of expense continues, maintenance costs pyramid rapidly, and production costs increase proportionately. It is obvious, therefore, that tremendous savings are possible through the installation and operation of modern self-cleaning water-wash spray booths.

Leading manufacturers of spraying equipment design, build and install a variety of special apparatus to meet particular finishing or production conditions. This equipment provides for high speed line finishing or coating of objects small and large, from vanity bottles to steel sheets. New products, finishing materials and operating methods constantly present new requirements. Spray equipment engineers are called upon almost daily to design special automatic and semi-automatic machines and exhaust equipment for use with unusual finishing materials, for operation under difficult conditions or to meet some special production necessity. Experienced representatives are always available to help you solve your finishing problems, no matter how simple or complicated they may be.

safety valve, mounted on a durable lightweight control head. The container screws directly into the control head.

Air and fluid hose, each 4-ft. in length, connect the container and gun. A T-shaped handle for easy carrying provides a means of hanging the container from a belt, ladder or any convenient projection near the work.

By separating the gun from the container, it is possible to reach surfaces not accessible to a cup gun. The elimination of the weight of the container and material from the work-hand speeds up the operation and lessens fatigue.

Niagara Paint Meter—Gives an accurate record of the flow or consumption of most paint, varnish or lacquer products. When used on the lines from pressure tanks to spray guns it automatically measures the quantity of finishing material used during any period of time. This allows calculation of the amount consumed per piece, enables cost standards to be established, checks waste of materials, and the total counter readings allow determination to be made of when pressure tanks need refilling.

Paint meters are available in sizes to measure the flow of finishing materials at any quantity, either for handling in bulk or for measurement during the manufacturing or blending operation.

Developments during the past year in the use of Niagara paint meters have confirmed their suitability for reliable measurement of most finishing materials, but have also established that they cannot satisfactorily be used on certain types of stains containing a heavy pigment that settles to the bottom, or on certain synthetic enamels, especially white. The meter contains internal parts of

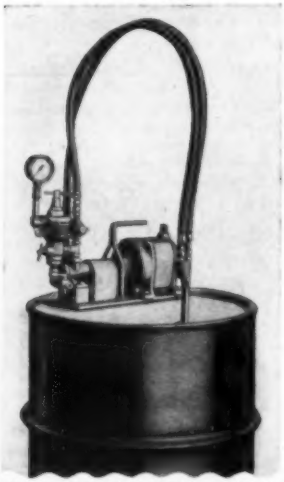
Measures quantity of finishing material that passes through pipe line or hose.

bronze which cannot be allowed in contact with such enamels. For lacquers and other finishes which do not corrode or become discolored by bronze, the meter has proved satisfactory.

Fluid Circulating Pump—A self-contained fluid-circulating pump, operated by electric motor or by air motor drive. The new unit is designed as an economical and safe method of delivering clear lacquer, varnish and other non-pigmented finishing materials from the original

shipping container to the spray gun.

It can be readily changed from one drum to another in a few seconds. The circulating pump gives results similar to those obtained with a pressure-feed tank. The pump also eliminates the necessity of transferring material from the original shipping container, and makes possible



Mechanism can be placed on head of shipping container or on wall bracket.

an economical pressure-feed system direct from the drum. Motor pump, relief valve and fluid feed regulator are mounted on a steel base plate which may be secured to the top of the drum or attached to brackets fastened to the wall above the drum.

Gyro Electric Sander—A new type of portable rotary sanding machine. The movement of the sanding pad closely simulates the hand sanding motion of cabinet and furniture craftsmen. Abrasive paper attached to the bottom of the pad has a movement whereby each particle of abrasive moves in a centroid of approximately 5/16-in. The outstanding features produced by this movement are: Extremely high cutting speed, uniform finish and the elimination of chasing and graining effects.

The machine is efficient for heavy production jobs, but flexible enough for the lightest work. It replaces expensive hand sanding on new or refinishing work, sands out undercoats, feathers "spot jobs," and removes paint from finished metal, wood or composition surfaces.

Perfect balance, light weight (3¼ lbs.) plus the compact dimensions and design of the sander head provide a comfortable "fit" to the hand, making the Gyro extremely responsive to the guidance of the operator. The machine is easy to operate and produces uniformly high quality

A new type of electric sander noted for convenience, safety, speed and economy.

work, 25% to 50% faster than is possible by hand.

Power is transmitted to the sander head by a new type of extremely flexible shaft, from the heavy duty ¼-hp., 3450-r.p.m. electric motor.

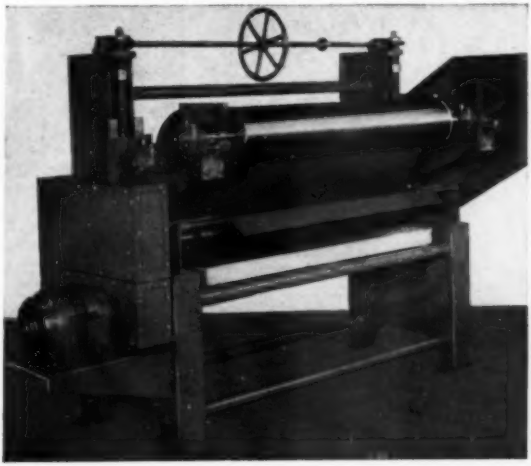
Three different types of motor mountings are provided: 1) the bench plate type for use on the work bench; 2) ceiling suspended type with the motor suspended from the ceiling or overhead trolley by means of a yoke; 3) adjustable height pedestal model with motor mounted on a 3-leg caster base.

Small model coating machine in operation.

Coating Machines (New Models)—The SP Model Coating Machine is a 48-in. single coater; weighs 3,500-lbs.; is fitted with circulating pump unit consisting of a motorized pump, supply tank and connections; has automatic conveyor feed equipment. All bearings of the SP model are 2-screw split type so that any of the rollers can be lifted out by removing only four screws. End seal plates are held in position by motion of rolls; they can be removed simply by lifting them out of place.

The applying rolls are available cushioned with rubber, synthetic rubber, gelatin, rubber with a gelatin covering, or with a metal surface—to suit the individual requirements.

The feed roll and doctor roll are made of steel tubing with heavy spider plates welded to both the shell and the shaft to form a rigid unit which, when ground smooth, will retain its accuracy over a long period of service. Cores for the cushioned applying rolls are made in the same



The Model SPC single coater machine has a 17-in. diameter rubber-covered roll, with adjustments which permit satisfactory heavy coating.

manner as the all-steel rolls and then covered with the cushioning material.

The cushioned rolls of the SP Model are fitted with metal wear plates on their ends where they contact the seal plates. In this way the cushion material does not contact any other member in any but rolling friction position, and roll wear and power consumption are held to a minimum.

The coating material is carried in a trough formed by the crotch between the doctor roll and applying roll, which is sealed at the ends by means of removable seal plates. This is said to eliminate the need for a separate pan or trough, and it greatly simplifies cleaning.

When made for single coating the bottom roll acts as a feed roll only. This roll is then fitted with a doctor plate of spring bronze which removes any of the coating material that might be picked up from the applying roll in coating thin stock, so that no coating material will smudge on the dry side of the sheet or panel being coated. Any type of drive can be used, such as an ordinary motor, "V" belt variable-speed, and so on.

High Speed Spray Gun—Designed and constructed to meet the urgent need for a spray gun with a high degree of resistance to the abrasive action of porcelain and ceramic materials. This new model incorporates strengthened wearing parts and materials which increase the life of the gun, assure efficient performance at all times, and eliminate production delays caused by gun failures.

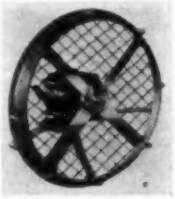
Its strengthened wearing parts assure dependable service and longer life.

The gun body is finished in natural alumilite, giving a hard, wear-resistant, aluminum-colored surface. Gun hook is removable and may be replaced when worn or damaged. Trigger pivot screwhole bushings and reinforcements inserted in the trigger at the contact point of the needle are special hardened steel.

Inserts used in the orifice of the fluid tips and points of the fluid needles are made of carboloy. This material is only slightly less hard than diamond, and gives extremely long wear.

Universal Air Filter—For removing oil, water and foreign material from compressed air lines. Air is filtered through the minute pores of a manufactured stone which is highly porous. Two stones are furnished so that at intervals of one or two weeks, the contaminated stone can be removed and replaced with a clean stone. Stones are easily and quickly changed. The contaminated stone is cleaned by immersing it in naphtha or benzine overnight, rinsing it in clean solvent and allowing it to dry. When this filter is installed and in service, part of the oil and water from compressed air is removed in the lower chamber of the filter prior to passage of the air upward through the filter stone. This is done through centrifugal motion. The velocity of the air is such that the whirl motion in the bottom chamber causes the larger particles of oil, water and other impurities to be thrown to the inner rim, and to collect in the bottom.

Exhaust Fans—Designed to effect rapid movement of a large volume of free air. These fans, available with ¼-hp. or ½-hp. direct-connected electric motors, provide an effective and economical means of exhaust wherever a general vapor, fume or dust condition prevails. They are built for use with spray-finishing equipment as well as for other exhaust purposes.



The ¼-hp. 4-blade fan.

Ball-bearing explosion-proof electric motors, with which the fans are equipped, meet the requirements of the Fire Insurance Underwriters for handling hazardous as well as ordinary vapors, fumes and dust. They operate smoothly with a minimum of power consumption, and can be installed in window, wall or ceiling openings provided for this purpose.

The ½-hp. motor turns a 4-bladed fan 1725-r.p.m. to move 6350-cu.ft. of air per minute. Where exhaust volume requirements are somewhat less, the 2-bladed fan on the ¼-hp. motor removes 5250-cu.ft. per minute at the same r.p.m.

Fan construction is strong and durable. The ring is grey-painted cast iron, and blades are air foil type, made of highly polished aluminum to provide maximum draft with minimum size and weight. The one piece galvanized wire screen safety guard bolted on motor side of the fan gives necessary protection when installation is within reach of persons in the room.

Thor Spray Gun — An improved model for heavy materials; is so designed that heavy materials such as asphalt paints, sound deadener materials containing sand and other abrasives, will flow out easily through the rounded contours from material inlet to material nozzle.

For spraying sound deadener, etc.

The new gun is offered with a variety of nozzle set-ups, and has a ¾-in. material inlet openings. It is of the internal atomization type and nozzles can be furnished to deliver either round or flat spray.

Material Containers for Spray Guns —An improved quart-size paint container and special cover for use with siphon-feed spray guns. The quart aluminum container has straight sides reinforced by a steel band with the aluminum spun over it; has no obstructions inside or out, and is large enough for a man's hand to be inserted with a wiping cloth. This cover is a strong, light-weight, non-corrosive stamping which locks in any position on the circumference of

Either container can be used with gun.

the aluminum container. The lip has a flange which fits over the rim of the container and seals against leakage with a fluid-resisting gasket.

The lock is made of steel spring clamps, with wide lips, fitting the circumference and clamping under the steel band of the container. These clamps open and close scissors-like, revolve in any direction, and are tightened with a locknut.

The lock cover fits the standard quart paint cans of leading manufacturers of paint. A shorter siphon tube is provided for use with these cans which are approximately 1-in. shorter than the standard aluminum siphon container furnished.

Mixing Tank—A new hinged-lid mixing tank, designed to facilitate economical and efficient agitation or mixing of lacquer, synthetic enamel and other pigmented finishing materials. This tank provides an inert atmosphere for the mixing of these materials, thereby preventing oxidation while handling.

Available in 30, 60 and 120-gallon capacities, the tanks are plain, straight-sided shells inserted into a foot ring. Covers are 5/16-in. flat steel stock, hinged across the tank with malleable cast-iron hinges.

Clamps render the hinged portion pressure-tight. The remainder of the cover is bolted through a special solvent-resistant gasket into a steel channel welded to the tank lip to provide a gasket recess.

The hinged portion of the cover is of generous area to permit quick, easy filling of tank. A pouring baffle protects the gasket from accumulation of paint and solvents while filling. Leakage of explosive vapors into the mixing room is prevented by the impervious one-piece gasket. Each tank is equipped with an explosion-proof motor. The clamped lid affords assurance against overrunning, with resultant loss and other hazards, in case of emergency.

The degree of agitation in the tanks is adequate for efficient mixture of heavy-bodied pigment portions throughout the entire batch, and maintenance of a properly mixed material.

Tanks are so designed that they may be inter-connected in different ways to form a battery for use in paint-circulating systems.

Tank has hinged-lid, pouring baffle and a safe explosion proof motor.

Sealer Extension Spray Gun—This sealer extension gun is designed primarily for applying sealer to body seams on the under sides of automobile bodies to prevent dust from entering the car body through open cracks. On the upper body joints a ribbon of sealer is laid on the seam. Such a ribbon cannot be laid up against an underbody joint. The sealer must be sprayed up on to it. The spray nozzle is held about 6 to 8-in. below the seam and sprays a pattern 2-in. to 3-in. wide, doing a thorough job.

Extension nozzles, 4 to 10-in. available.

This type of spray gun is also ideal for sealing body seams in other

Many a woman endowed with natural beauty would look quite ordinary without the benefit of finish.

Without deftly applied rouge, lipstick and nail polish to glorify her beauty, she would not rate that irresistible "second-look" from the ever-searching eyes of more men.

Whether it be woman or commercial product, finish is all important. In products it can mean the difference between the ordinary mine-run and outstanding leadership.

If you are interested in giving your products that "second-look" advantage in sales, you will write us about our creative studio service . . . a service rendered to reputable firms without cost or obligation.

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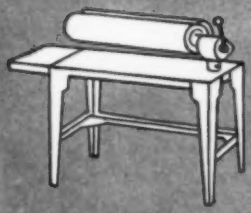


Stepped up

HERE'S a new type of white enamel for *fast* baking!

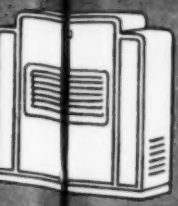
It's Du Pont Short-Bake DULUX . . . whose stepped-up speed in the oven (8-15 minutes at 350°) offers you brilliant whiteness with drastic cuts in production time.

This high-bake speed not only steps up production . . . but it allows you a *greater* output with *smaller* ovens. Thus you save big initial expense on equipment.

Short-Bake DULUX has another feature. It can be applied directly to solvent cleaned steel, bonderited steel and primed steel. *It gives highly satisfqctory results with only one coat—*

DU PONT

SHORT-BA



p for Speed!

instead of the usual two coats or one coat after a priming coat required by orthodox lacquers and enamels.

Short-Bake DULUX is ideal for many metal objects where long exposure to weather is not necessary. It has extreme hardness, adhesion, flexibility, durability; is highly resistant to soap, grease and alkali; does not mar easily. It is also made in colors.

For complete information write to E. I. du Pont de Nemours & Co., Inc., Finishes Division, Wilmington, Delaware. Canada: Canadian Industries, Ltd., Toronto. Great Britain: Nobel Chemical Finishes, London.

BAKE DULUX

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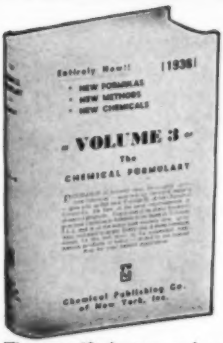

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Emulsions
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Paper
Photography
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Pyrotechnics
Rubber, Resins, Waxes, Plastics
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Textiles, Fibers
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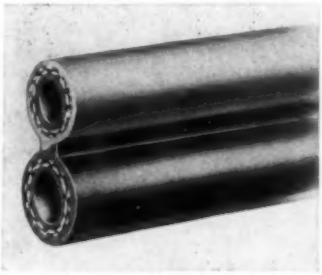
places. It is used, for instance, to seal the cowl wells (weather proofing) where they are joined to the body proper. It also has a wide application in other fields where it is an advantage to spray a sealer instead of flowing it.

Twin Paint and Air Hose—A special twin air and material hose, joined by the famous "Siameez Web," that assures a safe lasting joint. The sturdy tube of the black paint hose is made of a special composi-

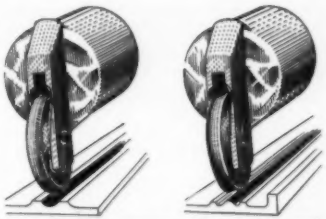


One is black; one is red.

tion (not rubber), which is unharmed by turpentine, naphtha, benzine and other solvents used in paints and lacquers. The rubber composition tube of the red-air hose is dense and thick for air service. Each hose is reinforced by braids of strong cords. The tough covers are made of paint-resisting rubber compound. This paint and air hose is made in continuous lengths to 50-ft. Exceptionally smooth finish inside and out.

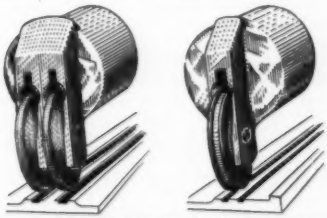
Mechanical Striper—Mechanical stripers are now a standard production tool in thousands of industries,

This tool is easy to use.



Left—Special convex wheel for round groove.
Right—Special concave wheel for round beading.

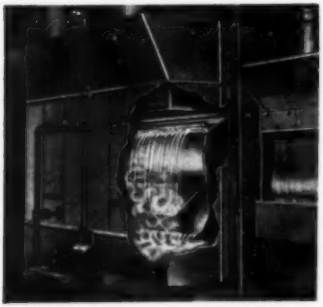
and the requests are growing rapidly for special wheels to stripe moldings of various designs — moldings with flat, concave, convex and V-grooves, as well as various sizes of ribs and beading. Due to the hundreds of different shapes and sizes, these wheels have to be made to order, although there are 10 standard wheels which produce stripes from 1/64-in. to 9/32-in. in width available for the tool illustrated here.



Left—Special wheel for double stripes in grooves on flat surface.
Right—Special wheel for double stripes on flat surface only.

Torrent Type Water Spray Booth—Has special construction, and incorporates a new principle of operation, making it very economical in average production use.

Water is drawn from the sludge tank and pumped to a horizontal pipe located near the top of the booth. The water pours in a steady volume from this pipe into a trough which deflects half of the water into the cleansing chamber at the back of the



Showing how curtain of water flows.

booth, and the other half over the water curtain which flows behind the object being sprayed.

A positive suction fan above the booth carries the paint-and-fume-laden air, and a large volume of the water which is entering the sludge tank from the water curtain, into the cleansing chamber. As the air and water are drawn up, they meet the cascade of water pouring from the pipe and trough at the top, with the result that a violent churning of air and water is developed in the chamber. Because of this churning action, the air is thoroughly cleansed before it reaches the eliminating plates in the top of the booth and the fan in the exhaust stack.

Extension Handle for Spray Gun—A new type extension handle which adapts the spray gun to extension spray painting work. The handle is designed specially to afford the convenience of an extension gun in many classes of railroad and industrial painting. The extension is light in weight and properly balanced. Location and construction of the trigger are such as to make operation simple and easy.

Nozzle of the gun is tilted at a 40° angle from the line of the handle. This facilitates spray-coating of walls, ceilings, structural work and maintenance jobs.

The extension is rigidly constructed of air and fluid tubes, held by clamps and soldered into a strong casting at the inlet end. Extension trigger is attached to this casting, and operates the gun by a simple ball crank system.

The new handle has the same combination of air and fluid connections as are available on a regular spray gun, and may be attached or removed in a few moments. Standard lengths are 3, 4, 5, 6, 8 and 10-ft. The 8 and 10-ft. lengths are specially reinforced.

The use of flock as a decorative coating for many products is increasing in poularity. To do this work on a modern production basis, specially designed material tanks, flocking guns and ventilating booths are required for maximum efficiency. The 2-compartment spray booth for the application of the adhesive or binder, to be followed by a flock application, is favored in some industrial plants. It is compact, efficient and economical. Provision is made for trapping and reclaiming the excess flock. Vivid color effects or soft suede-like finishes are easily attained. Backgrounds for window displays, texture-like display cards, window signs, artistic designs on wallpaper, pennants, banners, and letters and emblems on sweaters, etc., are creations of this newest industry that helps to stimulate sales and move merchandise from shelves. Ground cork, sawdust, dry powders and granules can also be applied with modern flocking units.

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High Gloss . . . Low Gloss . . . High Bake . . . Low Bake . . . Air-dry Gloss . . . Air-dry Dull . . . Pigment Black . . . Straight Japan. Here is the complete "Black" line . . . 80 years in the making.

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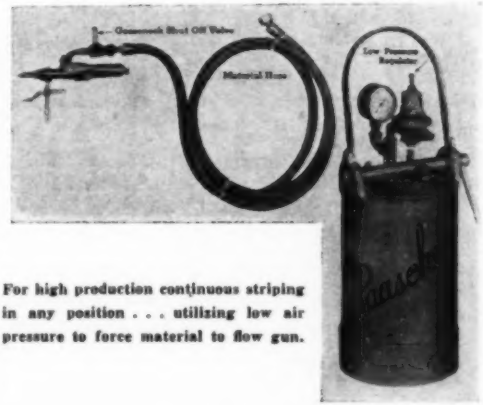
Water-wash spray booths are designed to cleanse exhausted air by the air-wash method. They were developed to prevent the discharge of heavy solid paint residues to the outside of buildings. They make possible the operation of a booth in neighborhoods where standard fan or blower type booths would be prohibited, and in locations where a suitable stack could not be installed. Water-wash booths may be used when spraying any ordinary paint or finishing material but they offer a particular advantage when such materials as primers and enamels are used, where the residue is heavy and sticky. A notable advantage of the water-wash spray booth is the reduction of cleaning costs, both inside and outside the building. Frequent cleaning of the fan, pipe and stack is eliminated. The exterior appearance of the building requires less attention. Paint vapor does not work its way back into the plant to be caught in the fresh air intake filter.

High Production Striping Unit with Pressure Tank—When many similar articles are to be striped or decorated and when color changes are not frequent, a high production striping unit such as that illustrated here can be used effectively. Material is delivered to the striper or flow gun from a pressure-feed tank equipped with a low pressure regulator to accurately control material supplied. Clamptight covers for the material container are quickly removable and replaceable by a single lever operation. Only seconds are required to remove and replace covers. Tanks can be equipped with extra material outlets, at slight additional cost, for use with two or more striping tools. Refill containers can be supplied to minimize cleaning time for color changes. These high production striping units make it possible for one operator to apply several thousand feet of stripes daily.

The outfit includes a thumb action flow gun with adjustable guide and a gooseneck valve for shutting off material.



For high production continuous striping in any position . . . utilizing low air pressure to force material to flow gun.

Spray Gun with Snaplock Cup—Outstanding features are:

1) The new snaplock cup is easy to handle. One downward motion of the snaplock cover grips the cup instantly—a one-hand operation.

2) The cup is easy to clean; its cover may be removed with one hand by simply turning the knurled grip nut and touching the grip release.

3) Cup has an interchangeable-cover for pint and quart cups; both the pint and quart cups have a wide opening for easy cleaning.

4) As soon as the snaplock cover is placed over the cup, there is a

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Among the most beautiful and popular finishes exhibited at the recent Furniture shows were the new colors lately developed by our laboratories for

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Obtaining these exquisitely delicate tones of "Lighter than Natural Wood" finishes is greatly simplified by the quick and effective action of

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"S. Q." Stains, Fillers, and water white Sealers and Finishes provide the ideal materials for the finishing coats.

Complete information for obtaining these handsome, new finishes sent promptly on request. Write today.

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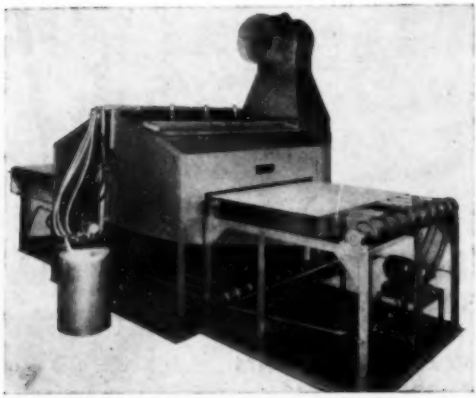
SPRUANCE QUALITY

click and the cover is on and remains on, even if operator fails to promptly tighten the knurled grip nut. After this knurled nut is turned down, the cover cannot possibly leak.

5) Less than one second is required to detach or attach cup.

Easy to remove; easy to clean.

6) The continuous rim provides a positive seating—the clamps will not chew or cause low spots—and there are no pegs to work loose or replace. No projections to pick up lint or threads when cleaning cup.



For automatically coating sheets of plywood, metal or paper.

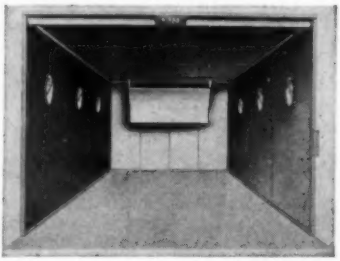
We have a permanent protective coating, which has been used successfully for the protection of large Sirrocotype exhaust fans against the corrosive action of moist hydrofluoric acid fumes, etc. A fan coated with this material remained in operation for 21 months; whereas previously it had to be replaced every 30 to 60 days.

Another application of our materials has been for use on the inside of sandblast booths, which are of sheet metal construction. The coating has taken care of the back-bound action in an entirely satisfactory manner, having been in use for over a year and having many months more wear left in it.

In both of these applications our liquid rubbers were used, which are self-vulcanizing and air-curing, and can be applied either by brush or spray gun, the same as paint.—288.

Automatic Spray Machines (F3614)—An automatic machine for spray painting wallboard; equipped with three automatic spray guns to coat sheets up to 48-in. wide. Large ventilating booth and ½-hp. exhaust unit remove all spray fumes. Conveyor is 12-ft. long, 4-ft. 4-in. wide, 3-ft. high, and is equipped with electric motor drive with speed reducer and varispeed pulley operating at from 20 to 60-ft. per minute. Units of this type can be used for spray painting metal, wood or paper sheets of various sizes. Production costs can be substantially reduced.

Truck Spray Booths—Sectional spray booths large enough to accommodate the bodies of freight trucks and trailers; designed for the greatest possible flexibility of application; user may purchase only a top and one side, or a top and two sides, or a top, back and one side, and thus utilize his own walls as part of the



For trucks, trailers and buses.

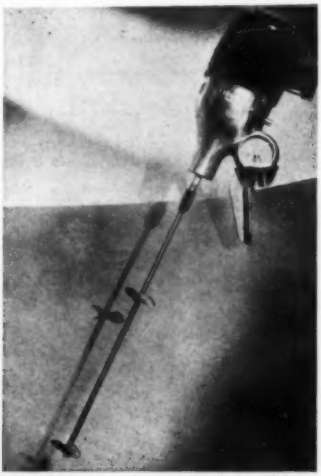
spray booth. Constructed of 22-gauge sheet steel sectional panels, reinforced with angle steel framing, spot welded. Top, back, right or left side exhaust can be furnished.

Power-Matic Spray Units—For use on automatic spray machines where parts or products to be spray painted or finished are moved past the spray station by conveyor . . . . intended for high production work in factories where it is necessary to coat long runs of products efficiently and rapidly, yet retaining all the characteristics of a fine finish. Are adaptable to the application of practically any finishing material. Made

Power-matic No. VR stationary production gun.

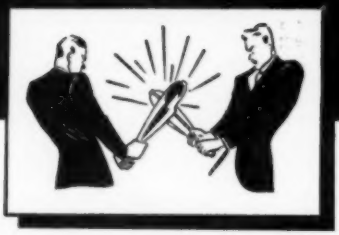
of heavy bronze, finished in polished nickel. Nozzles are of bronze and specially hardened ground steel to resist abrasion and wear. Adjustments include air control valve, "micromatic" material control valve, and unit angle adjustment. The newly developed needle valve rotates to free the gun from any obstructing foreign particles, thus insuring uninterrupted spraying. Gun sprays continuously on the production line until shut off by hand or solenoid valve. Spray head is the free-floating, anti-friction type. Both nozzles revolve together in making adjustments, thereby reducing friction and nozzle misalignment.

Portable Mixer—Has new feature, a guarantee of "no grease in the mix." Using a new type pre-lubricated sealed ball-bearing in the important extended bearing, the manufacturer guarantees that no grease or oil will ever run down the shaft, either from operation or careless lubrication. This improved method of grease prevention was selected after exhaustive tests of seals, oil traps,



For effective, safe, economical mixing.

WHY



(Above) Easy Washer Model 9SS9, Easy Ironer Model 139. Both incorporate distinctive features which have made Easy a well respected name in its field.

REAL PROOF! This test PROVES Polymerin's toughness. Two Easy washer legs may be banged together repeatedly without damaging the Polymerin-finished surface. Even after this rough treatment, there are no mars or scratches.

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SINCE 1878—For more than 60 years, Ault & Wiborg Corporation has been making fine industrial finishes for every purpose—lacquers, varnishes, metal decorating materials, and now, Polymerin. Ault & Wiborg is a subsidiary of Interchemical Corporation, a $20,000,000 organization. This association makes available to A & W the results of Interchemical's program of Interrelated Research—a program which already has produced significant developments in many fields of industry.

LEADING MANUFACTURERS LIKE EASY USE THIS EXTRA-TOUGH SPEED FINISH

Alert manufacturers, the leaders in their field, are turning to Polymerin, the original short-bake metal finish with amazing qualities of durability. One of the first to adopt Polymerin was the Easy Washing Machine Corporation, of Syracuse. Known for its high production standards, Easy has found that Polymerin provides these three major advantages:

1 **POLYMERIN IS EXTRA TOUGH.** It resists corrosives, soaps and alkalies; it won't chip or mar. Polymerin assures a smooth, hard surface protection that will stand abuse and STAY beautiful.

2 **POLYMERIN MAINTAINS PERMANENCE OF COLOR.** Its gleaming white finish won't yellow. Polymerin matches porcelain! Comes in all colors.

3 **POLYMERIN SPEEDS PRODUCTION.** It dries not by oxidation, but by polymerization! This short-bake finish cuts production schedules. It sets dust-free with the speed of lacquers yet gives you the protective characteristics of synthetic finishes.

THE ORIGINAL HIGH-HEAT, SHORT-BAKE FINISH

POLYMERIN

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FREE! "The Answer is Polymerin," a booklet which will tell you how you can get the benefits which this new speed finish offers you.

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Please send me, without obligation, the Polymerin booklet.

Name_____

Company_____

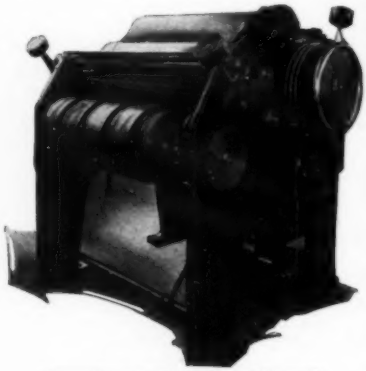
Product_____

Address_____

etc., covering a period of three years.

The life of the sealed ball-bearing, after exhaustive breakdown tests, is expected to be even longer than the standard bearing due to adequate lubrication and because no grit or dirt can possibly enter this bearing. Maintenance at this point is thereby reduced to zero and a double saving in time and lubricant is made.

Graining Machine—Reproduces wood or marble grain on flat sheets of metal, composition material or plywood. Offers a complete intaglio-

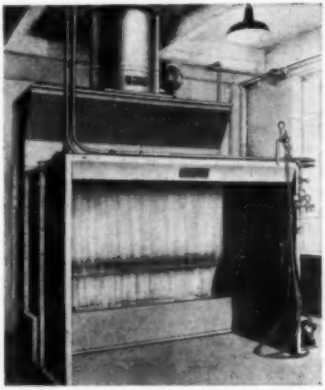


Reproduces wood and marble grain.

offset printing method from an original etched engraving reproduced from a positive. Equipment includes graining cylinders and plates, graining press, roll-cleaning machines and accessories to fit and production schedule.

Dynaprecipitor; Water-Curtain Spray Booth—A new development which takes the place of the ordinary water-wash chamber for spray booths.

Using an entirely new principle in the cleaning of paint fumes, the Dynaprecipitor reclaims all types of paints, synthetic enamel, vitreous



Wall of water in back of spray booth.

enamel, etc. It has no nozzles to clog or wear out, gives efficient elimination of paint pigments from spray fumes (99% efficiency) and is economical to operate.

The Dynaprecipitor unit is equipped with a special set of precipitator plates which are self cleaning. Water curtain extends the full width of the spray booth. Paint pigments which strike this curtain are washed down into the collecting pan, thereby eliminating the necessity of cleaning the front surface of the water curtain unit.

Scales, meters, dials and instruments of all kinds need waterproof and dustproof protection to insure reliable and accurate readings. One concern has developed oiled-silk covers that not only have these qualities, but in addition are transparent so that readings may be made without removing the protective cover. The company will make up covers to fit any instrument desired. In addition, they manufacture strong, durable light-weight, waterproof laboratory and industrial aprons.

EGYPTIAN HIGH-BAKE N. F. R.

A TOUGH mar-proof chemically resistant synthetic finish for all types of metal products. Extremely durable. Increases resistance to abrasion and other forms of wear so detrimental to ordinary finishes.

A FEW OF ITS FEATURES

- Applied by spraying or dipping . . . No special equipment required.
- Wide range of baking temperatures.
- One coat directly on smooth metals . . . No priming coat necessary.
- Special undercoats for finishing rough castings . . . Undercoats which air dry for sanding, yet may be baked as a composite finish after application of Egyptian High Bake N-F-R.
- Wide range of colors as well as black, white, and clear.
- Colors are furnished in high gloss finish.
- Clear may be had in high or medium gloss.

Write for further details.

EGYPTIAN FINISHES

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Container Tilter—Made so that a 5-gallon container can be locked into the supporting frame to prevent it

Handy in the finishing shop.

from slipping when the spout tilted is down for pouring. A hook, not shown in the photograph, holds the container, bottom end up for complete draining.

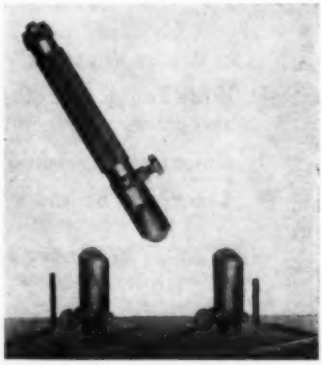
Sprayit Spray Gun—Regularly furnished in two styles—either as a pressure-feed gun with round, fan, and angle spray internal-mix spray nozzles, or as a syphon-feed gun with external break-up nozzle that provides both fan and round spray patterns from the same nozzle. Both styles of guns have the feature of converting instantly from bleeder to non-bleeder types, thus making them both equally suitable for use on both portable compressors and air lines.

The spray gun body and removable cover are made of die-cast aluminum, and the container is also aluminum, of 1-qt. capacity. The handle of the gun is comfortably shaped in revolver grip fashion, permitting ease in handling.

Another important feature is the self-contained oil-and-moisture filter

Can be used without cup container, also.

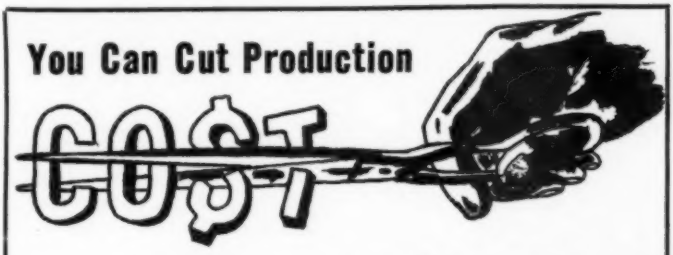
built integrally into the handle of the gun. This filter is equipped with a drain valve at the bottom of the handle, through which the accumulated oil and moisture is drained off periodically. All working parts are enclosed. All air nozzles and fluid tips are made of case-hardened steel, thus preventing wear and distortion of the spray.



Simple to operate; easy to clean.

DV Striping Tool—Makes clean-cut stripes of uniform thickness and width quickly and easily on straight or curved surfaces. The tool is designed for decorative striping on

You Can Cut Production COST



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If it's a SHORT-BAKE Synthetic Enamel you're looking for, then VITRA-CARLITE is "just the thing for the job." Its short-bake at 300° F. for 20 minutes allows for quicker production, greater output, and reduced manufacturing costs.

Below are listed some of the other distinctive advantages you can obtain with VITRA-CARLITE:—

- ✓ **Covers Well in One Coat.**
- ✓ **Produces a Beautiful, Porcelain-like, Tough, Mar-Resistant Finish.**
- ✓ **Chemical Resistance to Solvents, Oils, Liquor, Hair Tonics, etc.**
- ✓ **Sets Up Quickly . . Insures Clean work.**

Why not check the merits of VITRA-CARLITE by trying it? Or, write to our Service Department for copy of Bulletin No. 21 fully describing VITRA-CARLITE 100% Synthetic Enamel.

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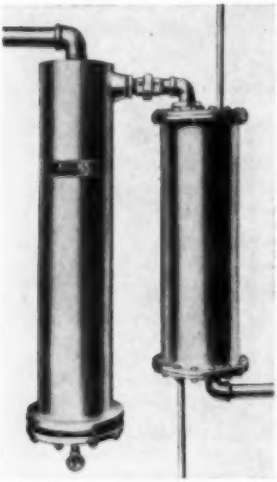
Boston Chicago

HILO

various finished and refinished products. The workman holds it like a fountain pen and draws it across the surface to be striped. It works equally well with paint, lacquer or synthetic enamel. Single, double or triple lines can be laid side by side at any desired spacing by simple adjustment of guides.

The liquid material is uniformly supplied from the paint chamber to the striping wheel by a gear pump in the head of the tool. This pump operates at a speed commensurate to the action of the wheel. Striping tool is furnished with three interchangeable heads for 1/64, 1/32 and 5/64-in. width. An extra head for broad 1/8-in. striping is available.

Pre-Cooler for Main Air Lines—Used in conjunction with a modern main line oil-and-water extractor, the new pre-cooler assures maximum



Pre-cooler, moisture-extractor set-up

efficiency in cleaning compressed air lines where excessive moisture is the greatest problem.

Outside shell dimensions: 15-in. in diameter, 36-in. long. Inside of shell is partially filled with air tubes so that heated air goes through them and is cooled by the circulation of water around the tubes at a minimum rate of two gallons a minute. The cooling of air causes it to deposit moisture which is collected by the main line oil-and-water trap which directly follows the pre-cooler. Surplus cooling water is piped to a sewer.

The unit will take care of 200-cu.ft. of air per minute. Inlets and outlets in both pre-cooler and extractor are for 2-in. pipe. The extractor is 45½-in. high, 8¾-in. in diameter, and is equipped with ¾-in. drain cock.

The canopy type exhaust system is built on special order for specific conditions encountered in the spray-finishing or painting of railway cars, street cars, motor coaches, trucks, automobiles, airplanes, large woodwork, machinery, etc. This system is also built for other than finishing purposes, such as for use in exhausting vapors over vats, etc. The canopy type of exhaust installation, in addition to having a hood or canopy, has a system of input air ducts, so that streams or curtains of air flow upward from floor slots to the canopy, between the spray operator and the object being finished and in such manner that the spray passes through the air curtain. This protects the operator from vapors and odor.

Portable Air Compressor Unit; Gasoline Driven—Designed to render continuous and uninterrupted performance under most severe operating conditions, at a minimum of upkeep cost and attention; built with a power plant and compressor that will deliver ample air to operate two large or three small spray guns. Piston displacement is 29½-cu.ft. per minute at 80-lbs. pressure. Power

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Formulated a *New* Way—to meet the unusual demands of today for:

Quickness of Drying
Hardness of Film
Elasticity
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Our Technical Service Department can recommend a MAR-VEL-FILM Finish to suit most any requirement, whether it be for low-priced novelties or for a finish requiring as much as twenty cold-check cycles. (Standard method of testing used, supplied on request.)

MAR-VEL-FILM Finishes have been used in production for more than two years. They are priced to meet the lowest unit costs. Write us for further information.

MARTIN VARNISH CO.

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Thinners
Pencil Lacquers
Cable Lacquers
Wood Lacquers
Metal Lacquers
Silver Lacquers
Textile Lacquers
Maintenance Paints
Automotive Finishes
Machine Tool Finishes

The Emblem of Quality in Finishes

The above list is by no means complete, but we trust it will serve to give you an idea of the extent to which WALKER'S chemical staff has solved problems submitted to it.

H. V. WALKER CO.
ELIZABETH, NEW JERSEY

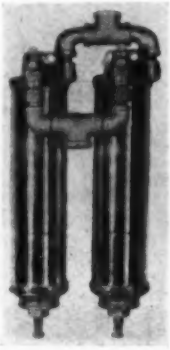
FINISHES
To Fit the Product

New England Warehouse
BROWN & DEAN CO., Providence, R. I.

Can be moved to and from work to be performed by compressed air.

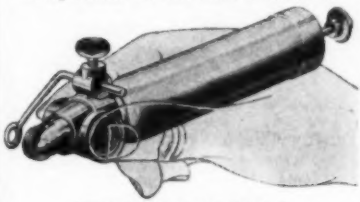
is furnished by a 6-hp. single-cylinder, air-cooled, roller-bearing gasoline engine. Equipment includes automatic unloader, intake air filter, air separator, air gauge, safety valve, air tank and chassis for moving the outfit to and from operations where compressed air is used.

Multiple Oil-and-Water Extractors —Where greater capacity in the cleaning of compressed air is required than is given by the ordinary air transformer or oil-and-water extractor, a series of ordinary extractors can be hooked up in groups of two or three, with all interconnections made. The 2-unit combination handles 50-c.f.m., while the 3-unit combination handles 75-c.f.m.



Assures clean compressed air for all spraying operations.

Master Paint Striper—Models are available for making straight and curved stripes 1/64 to 3/16-in. wide. Stripes are laid on with a little serrated wheel which is fed from a small reservoir and which is rolled over the surface to be striped.



Convenient; rapid; efficient.

The tool can be used free hand or with a straight or curved template or with the adjustable guides bent to any suitable shape to parallel the stripe with moldings, beads, edges, etc. Special guides or templates can be made up for production work. The tool stripes from 12 to 15-ft. per min.

Clover Leaf Paint & Varnish Corp.; Formerly M. & L.

An announcement, dated February 1, states that the name of Mayer & Loewenstein (established 1846) manufacturers of varnishes, enamels, lacquers and japans, has been changed to Clover Leaf Paint & Varnish Corp. Quoting from the announcement:

"Our Clover Leaf trade mark has become so closely identified with our products in the public mind that we have decided to change the name of our company. Please note that this is a change in name only, and does not in any way affect the policies or the personnel of our company, and we stand ready to serve you in every way under the new name, as we have under the old."

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There are no spectacular developments in wood lacquers. There is, however, the accumulation of years of testing and steady improvement resulting in our present line of gloss and flat lacquers developed for the wood working industries.

Where the maximum dollar value in solids and smooth-flowing solvents is required; where perfected resistance to cold-checking, abrasion, moisture, printing, beverages and light are desired, we shall be more than glad to submit samples for any desired test.

Within the comparatively narrow price range for this type of lacquer, we feel we can and do supply a material unsurpassed for its specific purpose.

THE VARNISH PRODUCTS CO.

5208 Harvard Avenue Cleveland, Ohio

Striping Grooves

Do you know of any method of filling in fine white stripes on bakelite handles for gas ranges by the use of a wheel similar to a polishing wheel? What we want to do is to apply a durable white enamel into slender parallel grooves which are 1/16-in. wide by .025-in. deep.

We are familiar with the ordinary striping tools, but are wondering if there is some quicker, simpler method to put in these lines. — L. T. Stove Co. (Gas Ranges and Cookers).

Several modern tools and methods are available for laying colored stripes in the narrow shallow grooves of metal and composition

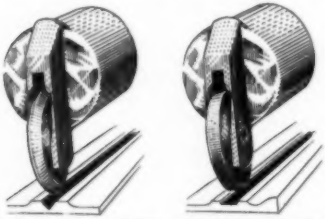

Fig. 1—The business end of one make of striping tool, showing wheels made to fit size and shape of groove to be striped.

materials. A manufacturer of the type of striping tool that rolls stripes on from a little wheel, supplies striping tools equipped with single or double wheels of special width and shape, see Fig. 1.

Then there is another type of striping tool, a "flow pencil" (see Fig. 2) fitted with a cone-shaped tip from which striping fluid can be flowed into grooves either by gravity or by controlled pressure. Round flow tips, which are interchangeable, are supplied in various convenient sizes. A finger lever on the tool gives the workman perfect control of the flow of striping fluid so he can flow it on rapidly or slowly as desired. The ¼-oz. gravity feed cup can be replaced with a pressure cup which

Fig. 2—A "flow pencil" with ¼-oz. gravity-feed cup, which can be replaced with a pressure-feed cup for overhead striping.

is used whenever it is necessary to force the striping fluid to the tip, as in overhead striping.

Other types of striping tools suitable for this work, are also available.

In addition to the several types and makes of striping tools, the leading spray gun manufacturers

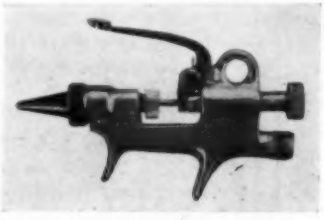

Fig. 3—One make of "flow gun" by which striping fluid is directed into grooves quickly and accurately. Mild air pressure is used.

Questions Answers

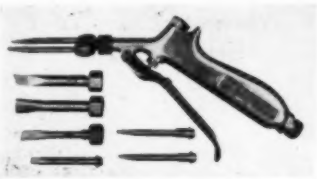

Fig. 4—Another make of flow gun, showing a few of the different nozzles that can be used.

have developed small "flow guns" by which striping fluid is forced out of specially made nozzles by gentle air pressure. Two different makes of typical flow guns are illustrated in Fig. 3 and 4.

These are not atomizing spray guns. The material, in a solid stream, is forced out of the opening in the nozzle directly onto the work. The gun is used by drawing it over the work with the nozzle sliding in a groove or guided along a line to be striped. Since the nozzle comes in direct contact with the work, the nozzle must be designed for the particular job it is to do. For this reason the nozzle and needle cannot be standardized, as parts of the gun, but must be built to the user's specifications.

The gun may be made with either single or multiple nozzles which will flow any width of stripe up to 1-in., and multiple nozzles may be designed to flow parallel stripes of either equal or unequal widths. Material flow with single nozzle guns may be controlled either by regulation of fluid pressure, or by adjustment of fluid needle travel, while multiple-nozzle guns are provided with a small needle valve at each nozzle. The gun is small, light and fits the hand comfortably. It may be operated either by thumb or index finger.

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applied by spray gun lend a finishing touch that makes things **sell.** CLAREMONT FLOCKS in white or colors, are conceded to be the best available by all users. Write for samples and prices.

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4318 W. 2nd St., LOS ANGELES, CALIF.

Masking Paste That Stands Baking

We are wondering if you can give us some assistance in connection with a finishing problem which we are endeavoring to solve for some clients, who are large manufacturers of automobiles in this country (England).

A section of the finishing shop is faced with the following difficulty in finishing engine bonnets: A feature of the bonnet is two concave "flutes," one on each side of the top of the bonnet running the full length. These "flutes" are chromium plated before the bonnet is finished. The bonnet is then dipped, stoved (baked) for 40 minutes at 375°F., sprayed four coats and then stoved again for 30 minutes at 160°F.

Our clients protect the chromium plated "flutes" with a graphite compound which is washed off after the bonnet is finished. The graphite compound cannot be brushed, and the present spraying method is most unsatisfactory, as the compound separates into glubules when it comes in contact with the chromium plated surface, consequently it is extremely difficult to completely protect the chrome.

Can you suggest any material that can be sprayed onto the "flutes" to protect the chrome from the dip enamel and spraying process, and which will stand up to the maximum stoving temperatures of 375°F. for 40 minutes?

We believe that certain shoe manufacturers in the United States spray light-colored shoes with some kind of rubber material to protect the shoes in the course of manufacture, and which can be stripped off easily when the shoes

are completed. We are wondering if there is any similar material available that can be stripped off the "flutes" like rubber, and which will stand up to the stoving temperature?—D. W. & Co., London, England.

We are manufacturers of liquid rubber protective coatings, both temporary and permanent, and our products are used in many different ways, amongst others as a masking material on 2-tone jobs, striping, etc., and after the operation has been completed, they are easily stripped from the object to which they have been applied.

Kelsanite is a liquid rubber product which is self-curing and vulcanizes at room temperatures, and up to a certain point in your operation we think that it would answer your purpose, the point being that stoving Kelsanite for 40 minutes at 375°F. is a higher temperature than it would stand, as this is above the melting point of rubber. Your second operation of 30 minutes at 160°F. should be all right.

In order to give you an idea of our product and so that you may make a test under your ordinary conditions of factory procedure, we are sending you a sample of Kelsanite No. 1094. This can be applied either by spray gun or by brush, and application can be made in the following manner:

The articles to which the mask is to be applied must be thoroughly clean and free from all loose particles; all grease, oil, rust, etc., must be removed. If a brush is used, the enclosed pamphlet will give you particulars of treatment of same before, during and after use. Kelsanite, being a latex

try to scratch or mar it!

Here it is—a lacquer finish that cannot be marred or scratched with the thumbnail, or other destructive agencies—a much tougher piece of goods than the ordinary lacquers. It produces a splendid transparent finish of full depth on maple, walnut, gum, mahogany and other cabinet woods. . . . It is made in either the Clear Gloss Rubbing or the Satin Finish. Mar Proof Lacquer Sealer is recommended for the first coat.

THE SCHAEFER VARNISH CO., INC.
LOUISVILLE, KY.

product, a special or latex gun is necessary to use with it—a gun constructed of stainless steel or aluminum, and entirely free from all copper, brass or copper alloys that might possibly come in contact with the Kelsanite. When a spray gun is used, a pressure of about 25-lbs. is recommended.

Whenever you wish to obtain a clean or clear edge of the article that has been masked, this can be done by using a very sharp knife or razor blade to cut the Kelsanite along the desired line. When doing so, keep the cutting tool well supplied with water by dipping it in water as often as is necessary. A little experimentation will have to be made along these lines until the "knack" of doing it is acquired. You will find it cuts best just before it is almost dry.

Allow the masking material to become thoroughly dry before applying any paints or lacquers. When it is desired to remove the mask coating, this can be easily done by breaking the coating and then pulling it off by hand.

The sample that we are sending you is somewhat similar to that used by shoe manufacturers in the United States. After it has dried the resulting product is an almost pure rubber coating.

After you have made tests with the sample sent you and will advise us of your findings, we will be glad to cooperate with you in any manner possible, but we are skeptical with reference to the temperature of 375°F. and the action it may have on our product. —KELSAN PRODUCTS.

A material called "Spray Kote" (or Sprakote) manufactured by Roessler & Hasslacher Chemical Co. (a duPont subsidiary) has been tested under the conditions described by your correspondent and we believe would serve their purpose satisfactorily.—THE DE-VILBISS CO.

The problem appears to be quite a complicated one, requiring contact on the ground before a constructive recommendation can be supplied, hence we are not in a position at this moment to provide you with a recommendation as to the product and method of procedure to be followed. . . . ROESSLER & HASSLACHER CHEMICAL DEPT.

Does any reader of INDUSTRIAL FINISHING have any suggestions on this? We would like to obtain further information about this.—ED.

Impervious FINISHES for Industrial Use

Pyroxylin Lacquers, Baking and Synthetic Enamels, Finishing and Insulating Varnishes, Protective Coatings, Primers and Surfacers, etc.

IMPERVIOUS VARNISH COMPANY, KOPPERS BUILDING, PITTSBURGH, PA.

Brush Keeper

HAVING BEEN confronted with the problem of trying to avoid excessive wastage of color and solvent, as well as endeavoring to prevent undue wear on brushes through frequent cleaning in the hand-painting and decorating of vari-colored wooden toys, I worked out a plan which

Sealed in and supported by paraffin, this brush will remain in first-class condition indefinitely and may be re-used without loss of time or pigment.

preserves brushes adequately and keeps them soft and ready for reuse whenever the color they contained is again needed.

My plan involves the use of ordinary wide-mouth Mason fruit jars. The jar is filled to slightly more than bristle length, with a solvent similar to the vehicle used to carry the pigment in question. The brush is lowered into this jar so that its bristle tips do not quite reach the bottom. Then a coating of hot paraffin is poured around the brush, on top of the solvent. Enough paraffin is poured

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in to make a coating thick enough to support the weight of the brush without cracking. When this paraffin cools and hardens it seals the solvent against evaporation and it prevents the settlement of dust while the brush is out of service.

A wide stripe of the paint will identify each container and make it easy to return the brush to the proper jar, and equally easy to pick out the brush carrying the color desired.

The paraffin seals are easily cut with a knife to permit withdrawal of the brush. Broken pieces of paraffin are saved in a convenient can until enough have been collected to be remelted, skimmed and used again.

For small striping brushes and the like, an ordinary spring clothespin will serve as a temporary holder to retain the brush at the proper position in the solvent while pouring the paraffin and waiting for it to harden.—ELTON STERRETT.

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Flame-Resistant Coating

FIRE PREVENTION is a most important activity of all industrial organizations. A tiny flame licking along sheathing or a baseboard, or along a cable, may often result in property damage involving hundreds of thousands of dollars. Of even greater importance is the fact that fire, or a resulting explosion, may cost the lives of workmen, a loss that cannot be reckoned in dollars.

Naturally, every responsible company does everything possible to prevent fires and to limit their spread. For this reason electrical cable used in hazardous locations has been sheathed in lead or steel or provided with a flame-proof cover to protect the rubber or fabric elements from direct contact with the blaze. These necessary structural elements of a cable burn readily and will carry

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High grade units, in various sizes, for coating flat surfaced material, whether in the form of heavy stiff board, or light flexible sheet.

Picture shows laboratory model patterned after our larger floor machines, used by Bakelite Corporation and others for demonstrations.

Francis Roller Coating machines are fitted with metal, rubber, composition, or whatever kind of rolls required, provision being made for quick change. They spread uniformly—varnish, lacquer, enamel, paint, adhesive, etc., on metal, wood, paper, leather, cloth and other materials.

CHAS. E. FRANCIS CO.
RUSHVILLE, INDIANA

a flame from point to point. If the next point of contact contains extremely combustible material or explosives, a comparatively insignificant flame can result in a holocaust or an explosion.

Nor is this hazard confined to electrical wiring. Many other structural materials are extremely inflammable and must be safeguarded by a flame-resisting protective covering. To complicate the design problem, many of these coverings must also have the resilience of rubber.

Many problems involving the need for a flexible, flame resistant jacketing have been solved by the use of neoprene—for a properly compounded neoprene product will not propagate flame. Although such neoprene compounds will burn while in contact with a flame, the fire will go out as soon as the flame is removed. — THE NEOPRENE NOTEBOOK.

Pipe Lines Deliver Paint to Sprayers

IN FACTORIES having large volume finishing operations, paint handling costs have been reduced and output increased through the use of a modern paint-circulating system for delivering the spray finishing materials to spray operators.

The delivery of clean, fresh, uniformly mixed materials through pipe lines to the spray guns makes for better working conditions. It eliminates the trucking of paint through the plant, prevents any mess around spray booths, makes possible a greater degree of plant cleanliness and reduces fire hazard. There are no containers to

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clutter up the booths or to be cleaned and refilled.

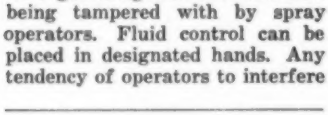
Each pipe line carries a different color or kind of material. The finishing material for the paint supply lines is put into mixing tanks and thoroughly mixed by a motor-driven agitator. It is then drawn from the tanks through the pumps, is strained and is circulated constantly from the mixing room directly to spray operators and returned to the mixing room. Regulated paint outlets are provided at the various spraying locations.

The circulating system is a positive guard against the fluid flow being tampered with by spray operators. Fluid control can be placed in designated hands. Any tendency of operators to interfere with the paint mixture by adding thinner to suit their convenience is eliminated. "Off color" and dirt troubles are also prevented.

Finishing material is delivered to spray guns at a uniform pressure, insuring even application in the proper thickness by each spray operator, thus reducing any follow-up sanding and polishing that may be included in the finishing process.

Each paint-circulating system is individually designed, built and installed. It is engineered to the particular conditions under which the finishing department operates. All production line requirements are considered and the circulating system is planned so that there is no possibility of confliction with existing plant methods.

The equipment included is built for a long life of dependable service. Pumps are designed especially for this service; only motors accepted as suitable for this operation are used; regulators, gauges and other control equipment are accurate, positive and trouble-free in their regulation of the system's operation. Mixing and feed tanks have been built especially for this service and are designed not only for efficient op-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eration but for convenience in filling and cleaning. Pipe lines are of ample diameter and bends are wide to prevent any possibility of restriction, clogging or back pressure in the paint line. The equipment is installed in a neat and clean manner so that it will not detract from an orderly plant appearance.

The paint-circulating system is available in small as well as in large installations. It is the modern method of paint handling for any plant where there is a continuous volume of production finishing.

New Finishing Materials

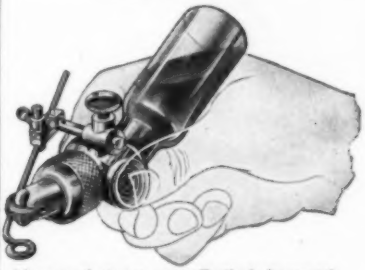
(The following items are a continuation of those listed in the Major Review of New and Improved Finishing Materials featured in the Special January issue of INDUSTRIAL FINISHING.*)*

Permaglo One-Coat Enamel—Bakes in a minimum time of 15 minutes, producing an extremely hard surface (second only to porcelain) which is exceedingly scratchproof and resistant to water and alkali. For example, it has withstood a 24-hour test in a solution consisting of 2% Gold Dust in a gallon of water kept at 180°F. Even the white enamel retains its original color.—300.

Clear Baking Varnish—Especially formulated to produce a remarkably scratch-resistant, pale, glossy, clear finish over nickel, chrome or electro-colored hardware, and over grained finishes. Its resistance to discoloration, due to age, particularly fits this finish for these applications.—301.

High-Heat Resistant Lacquer—Produced especially for the oil and gas heater industry as a finish on

MODERNIZE . . STREAMLINE BY STRIPING



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chrome and nickel trim that is exposed to high temperatures. This lacquer will not discolor even when exposed to direct heats of 400°F. for extended periods of time.—302.

Air-Drying Primer—A synthetic type of primer that will dry to take lacquer or synthetic top coats in from 10 to 30 minutes. Because of its extremely fine grind and tendency to lay close to the work, it does not require sanding. This primer, by itself or with top coatings, stands a most remarkable water or oil test. Because of its quick air-drying properties and the tough resistant finish produced, it has found wide application in the metal industry.—303.

Disul Cleaner for Brass — When brass parts are cleaned in this cleaner and finished in one or two coats of Permaglo type of baking synthetic, a finish is produced that will withstand a 1000-hour humidity test . . . . has excellent hardness and adhesion.—304.

Ciegal Cleaner — Galvanized iron treated with this cleaner and then finished in one coat of short-bake Permaglo synthetic has an outstanding finish. For the first time, galvanized iron finished in this simple, inexpensive process provides a finish entirely lacking in the customary weaknesses of finishes over galvanized iron.—305.

Letters From I. F. Readers

(Continued from page 8)

pensive wood paneling with the assistance of bleaching material, that they were able to successfully bid for heavy contracts. That is, the cheaper wood was more attractive than the more costly variety, because of the beautiful results, and lighter-than-natural wood colors which they were able to produce. Interior decorators have been looking to us more and more for means of supply striking results in wood interiors, and furniture to match the lighter finishes.—C. C. Co.

"Duro Val"

Can you give us any information on an enamel called "Duro-Val," and who manufactures this and how we can get in touch with them?—Z. Specialties Co.

We regret that we can find no listing of this in any of our directories or other reference information. Can some reader tell us?—ED.

Magic Tack Rags

I have looked through a considerable number of back files of INDUSTRIAL FINISHING, searching for the address of some concerns that make tack rags. I don't find the information. I am positive that I saw the name Magic Tack Rag advertised in the magazine when I used to get it, but I have apparently loaned or given away those issues.—P. F. J.

Look on page 57 of December 1938 issue; or page 85 of January 1939, or page 79 of this issue.—ED.

Glass Marking Ink

Will you kindly advise us by return mail where we can purchase the black ink which is manufactured by Westinghouse Electric & Mfg. Co., as we are very much interested in same? We read the article about this ink in INDUSTRIAL FINISHING magazine, August 1938 issue, page 20.—R. & A.

Write them at East Pittsburgh, Pa. —ED.

Pyrax; Filler

We note in your December issue, on page 17, you mention the product, Pyrax, to be used in furniture finishing, and would appreciate if you could advise us where this commodity could be located. We have a large number of furniture finishers in this locality interested in locating a definite source of supply on Pyrax.—W & R (Raw Materials).

This is a raw material used in the manufacture of wood fillers (incorrectly spelled "Pyrex" in the article). We are sending you the name of the concern that supplies it.—ED.

Come to Honolulu

I have a prosperous 3-man finishing shop here (Honolulu, T. H.) for sale. I am 65 years old and am crippled with swollen feet. We are running from $600 to $800 a month now, and business is getting better; $2500 will handle same.—H. H. Achor, 1800 S. King St.

Enameled Sheet Metal Wanted

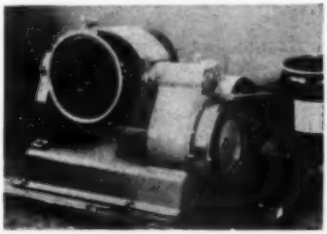
We are interested in obtaining metal in either coils or standard size sheets (3x8-ft.) with the following specifications:

.010 thickness
No. 3 temper
2 3/16-in. (if coils)
cold rolled (if coils)
baked enameled on both sides
ivory color
hot rolled (if sheets)

Would also like to know if you can put the metal through some rust-proofing process before painting, and whether the paint will stand machining without cracking off. This metal should be of the same type as used in the manufacture of toys.

If you are in position to supply us with the above mentioned metal we would appreciate your early reply with a sample about 3-ft. long, price in 1000-lbs. lots, and how fast we can get shipment to Los Angeles, Calif.—West Coast Metal Products Co.

Rejuvenates 5-gal. cans of Paint, etc., in 3 to 10 minutes without opening the can



No matter how much or how long finishing materials have settled, from lack of use, the "Miracle" will restore them to their original consistence in a few minutes. Noiseless in operation—clean to use. Also machines for ¼-pint to 50-gal. drum capacity.

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500 Robert Street St. Paul, Minn.

Luminous Paints

We are interested in locating a source of supply for a self-luminous or phosporescent paint that can be used in connection with sign work, and which will show up at night without the aid of reflection. If you can suggest a source of supply for such material we shall greatly appreciate your advising us.—M. M. Co. (Steel Products).

The names and addresses of several manufacturers have been submitted in reply to this.—ED.

We thank you for your letter together with the addresses of several concerns who are interested in fluorescent materials for finishing. We are enclosing for your information a price list of the various fluorescent chemicals which we supply, and while it is not complete it may be of some use in supplying general information on inquiries received from your readers.

In many cases the requirements for particular types of work are so exacting that each request must be handled individually in an effort to supply a chemical which will answer the needs of the customer.

We might say that the chemicals at the top of the list of the second sheet, from No. 19 to 64, are probably the best adapted for use in paints and finishes which would be excited by ultra-violet light. — The Patterson Screen Co.

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Capacity 50-Gal. DRUM

Miracle Paint Rejuvenator Co., Inc.
500 Robert Street St. Paul, Minn.

Aircraft Article

In the December issue of INDUSTRIAL FINISHING there was an article which dwelt at considerable length on the adhesive used in finishing the interiors of airplanes. We believe that in connection with our oil burner division we may have a use for this material and would appreciate being advised as to who the maker is and where we may contact him.—T. D. Co.

The December issue of INDUSTRIAL FINISHING carried an article by W. R. Allen on Finishing Airplane Motors. In this article are mentioned a new sound-proofing adhesive and a nitrocellulose specialty for coating aluminum and aluminum alloy sheets before fabrication, as well as a fire-resistant floor coating for balsa wood floors. Will you be good enough to advise us the name of the companies who are manufacturing these three products.—U. S. L. (Chemicals).

In the December 1938 issue of INDUSTRIAL FINISHING, an article by W. R. Allen entitled "Finishing Airplane Motors and Interiors" describes an adhesive which is used for fastening sound-proof material to the interior of the airplane structure. This adhesive material appears to have properties which might make it valuable for an application which we are considering. We should like to have the name and address of the supplier of this material.—E & W Co. (Engineering Laboratory).

In your December issue, in the article about "Finishing Airplane Motors and Interiors," I note mention of a sound-proofing adhesive. We are interested in learning more about this article. Could you give us the name of the company producing this adhesive?—L. Mfg. Co. (Hardware Specialties).

The information has been given.—ED.

Wood Graining

In your March, April and May 1938 issues you published articles about how to "Reproduce Wood Grain on Metal Surfaces," and we are very anxious to read of your treatment on this subject.

To be frank, we have had quite a few inquiries for the best method of doing this work and we have never

been able to secure from any of our writers satisfactory information on the subject. We realize this may sound like a strange request but assure you that it is not our intention to reproduce your story, but only to use the information for comparison with the data we now have.—(Automotive Magazine).

"Wyandotte"

Can you give us the name of the manufacturer of "Wyandotte" removable coating for interior of spray booths?—S. Mfg. Co. (Juvenile Furniture).

It's J. B. Ford Sales Co., Wyandotte, Mich.—ED.

Pearl Lacquer

We are makers of cast novelties and are looking for a lacquer finish called Pearline or Pearloid, but local (Elnora, N. Y.) paint concerns seem to have no knowledge of such a product. The lacquer we have reference to makes a finish like pearl, or at least like an imitation pearl.—E & E Co.

From the description of what you say you want, we take it that you are looking for a pearl essence finish that gives a pearl-like luster — one that has been used considerably during the past few years for finishing a considerable variety of products, including automobile bodies. We are sending you the names and addresses of some of the leading manufacturers of pearl essence lacquers.—ED.

Metal Seam Filler

Will you kindly send me the name and address of a manufacturer making a good fast-drying crack and seam filler to be used on metal surfaces? Have seams approximately ¼-in. wide and ⅛-in. deep. The filler must be able to stand a great deal of vibration and be a good adhesive for lacquer, which I am now using for finish coats. Lacquer putty does not answer the purpose. Lately I have been using a product put on the market by the ——— Chemical Co. known as "Bostik," but have found that it takes too much time to apply.—H. I. N.

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EDITORIAL

Business Survey of the Chicago Furniture Show

The recent winter National Home Furnishings Show, held at the American Furniture Mart January 9 to 21, was one of the best in the industry's history. Close to 11,000 dealers registered for the two weeks' show—an all time attendance high. Among the reasons offered for this large attendance, one was the delayed opening of the winter market. Markets previously opened in Chicago the first Monday in January. This meant manufacturers and dealers had to spend New Year's eve on the train en route to market. The later opening date not only left them home to celebrate the new year with their families, but gave them an added week to check inventories before leaving for the market. In this way they knew their needs; it was no longer necessary to guess.

Another reason for the unusual attendance is the urgent need for merchandise. Inventories are known to be low with dealers buying "close to the belt" for the past two years. The large attendance proved that dealers needed merchandise and a survey of their buying habits was a further deciding factor.

General Tone

The general tone of those at the show was reported to be extremely optimistic. Everywhere forecasts of good business during 1939 gave added impetus to the industry. Building, the backbone of the recovery program is definitely conceded to be on the upgrade. Refurnishing of homes, necessary replacements and normal new requirements present a rosy outlook for the industry. With no unforeseen developments to upset things, all phases of the industry expect a good year during 1939; all are putting their shoulder to the wheel to make it so. Newspapers, magazines and radio broadcasts are carrying the message of home furnishings to all parts of the world. Style conscious women are demanding new furnishings. New styling and values give 100% return for money invested.

Next Market in June

Reduction in the number of markets, heretofore believed impossible due to buying habits of

various types of dealers, is to have its first official trial during 1939. Arbitrating between the demands for a spring and fall market as against a winter and summer show, the Board of Governors selected June 5 to 17 as the new market dates, eliminating the May and July markets. Since markets are only set for six months' periods, no decision has been made concerning the fall and winter markets. Will the industry agree on June as the market date and accept the elimination of May and July markets? Only the actual test will tell. All eyes will be focused on the June market for only by the attendance record can the old subject of market dates be settled. Fewer samples per year, less market expense to the manufacturer. Will it impede or speed up the industry? Only the dealers can provide the answer.

How Buyers Acted

Buying at the show disclosed many interesting facts to the careful observer; it charts a course which manufacturers feel is a healthy route to good business. Total volume was compared by most manufacturers against normal business of 1937, rather than the abnormal light volume of 1938. Total orders, though smaller in individual size, were sufficient in number to equal and in many instances exceed 1937 volume.

Although extreme caution was exercised by the dealers in their commitments, an interesting note was that more high-style merchandise was purchased than at any market for the past two years. Most orders placed were for immediate delivery; price remained of secondary importance. The greater number of orders provided wider distribution for the manufacturer who was happy to extend his sales in smaller doses over a larger area. The widespread distribution showed a healthy, normal shortage in merchandise, and dealers and manufacturers agreed that good retail business during the first quarter would mean substantial repeat orders.

Prices Firm and Higher

Prices at the show where some 850 manufacturers displayed "everything for the American Home" remained firm; in some instances 2% to 5% over last year. Many manufacturers voiced the opinion that increased prices might have given the necessary touch of confidence to cautious buyers. Others felt that firm prices showed the healthy condition of the industry. Both points showed sound reasoning. Prices were firm and keyed to increased selling. This condition was said to pertain to all divisions of the industry.

Finishing Room Equipment That Has Greater Value

A manufacturer writing about a typical piece of finishing equipment says:

"There is practically nothing to wear out . . . . due not only to the design but to the use of expensive hardened and ground carbon steels, stainless steel, heat-treated steel, duralumin and bronze. Artificial but realiable tests show no wear at the end of a period corresponding to four years in the average finishing room."

Design, material, workmanship,

performance and durability—these are features to investigate carefully when deciding upon the purchase of finishing room equipment. Leading manufacturers concentrate their efforts upon developing products that offer maximum value to the user. Products that have these desirable characteristics are described and illustrated in the Review of New and Improved Finishing Room Equipment published in this issue of INDUSTRIAL FINISHING. Look them over and write for further information about those that interest you for production.

Choice of Color Adds Value to Products

Public fancy for color undergoes change more than twice a year. Colors that sell today are determined by watching and registering the stream of indications that are flowing from all sources: Advertising, dress fashions, movies, fabrics and art. The public expects change and shows its appreciation for what is novel and interesting by showing increased buying interest. New color distribution, enlivening designs and layouts in keeping with present public preferences for well-chosen colors are proving profitable.

Any color treatment that commands unusual admiration will be found to be in accord with the few laws that regulate the distribution of color in Nature. It will excel in the degree that it possesses fitness, proportion, harmony and the repose that the ultimate result produces in the eyes of the observers. The secret of success in all color work is the production of a broad general effect by the repetition of a few simple colors. Variety of this nature rather than multiplicity of colors and varied forms is the goal of color engineering.

It costs no more to use scientifically selected, psychological correct colors than to continue outmoded color styles. The public reacts favorably to that which is new, stimulating, and suitable.

Here is a typical instance that gives striking evidence of color's power. Two identical machine tools were supplied to a certain manufacturer. One was left with the usual shop coat of paint but the other was finished in colors to facilitate its operation. Controls received identifying colors; pedestals were painted in light-reflecting colors; working areas were painted to assure maximum visibility. Two years later, during an inventory by disinterested engineers, the regularly-finished tool was given the usual depreciation rating, while the other was valued at $500 more than its less colorful companion. Operators had taken extra pride in its appearance. They took better care of its maintenance and working parts. Output superiority made it more valuable.—H. KETCHAM.

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Cost of Developing New Products

Few of us realize what tremendous sums of money are being spent by manufacturing concerns for experimental and research work in developing materials that will take care of our finishing requirements more perfectly and at less cost to us. For example, here's a paragraph from the Annual Report of one large concern:

"Approximately $900,000 was spent on experimental work during the year, a considerable portion of this expenditure being accounted for by regular laboratory work in connection with established products . . . . [Our] laboratories are paying particular attention to the development of new products from cellulose, and from terpenes and resins. These materials are the basis of a large part of [our] present business, and further investigation of their potentialities should reveal new and logical lines for expansion."

And after the expenditure of these vast sums of money in developing new and improved materials, some of our finishers, not understanding how to use them properly, will condemn them as being "no good." The task of getting across to the user the practical information about how to use these newly developed and improved materials efficiently and economically is a huge one. Manufacturers of these materials and their representatives need our complete cooperation and help. It will be beneficial to all concerned to learn the merits and possibilities of what's new and how to use these materials successfully.

Case History No. 11

The aircraft industry presented an interesting problem to seal the joints and seams of gasoline tanks and pontoons, particularly when spot welded. In cooperation with government and other research workers in this field, a seam compound was developed that appears to meet all these rigid requirements for aircraft.

The compound is transparent and has a heavy consistency. It is generally applied to or in the seam or joint by pressure gun or brush. Since the compound is resistant to vibration as well as to gasoline, it is admirably adapted for sealing seams of gasoline tanks used in cars, trucks, boats, stoves, as well as those used in airplanes and on pontoons to protect the seams from either salt or fresh water.

Manufacturers of aircraft and accessories, or others interested in this problem, or in the solution of a specific problem of their own, are invited to write, furnishing all details, to—INDUSTRIAL RESEARCH DIV. OF WIPE-ON CORPORATION, 105 HUDSON STREET, NEW YORK.

A complimentary copy of "Case Histories" will be sent covering this and other problems such as, non-discoloring white metal finishes; burnproof enamels; two-tone finishes; eyelet coatings; 10 minute air dry metal finishes; magnesium alloy finishes; and coatings to resist alkali, alcohol and acids, together with a solution of the problem submitted. —Adv.

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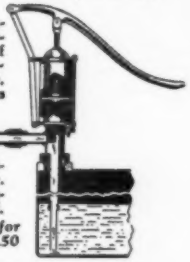

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V. J. Dolan & Co. Inc.
E. I. duPont deNemours & Co.
The Egyptian Lacquer Mfg. Co.
Hilo Varnish Corp.
Lilly Varnish Co.
Maas & Waldstein Co.
Oxford Varnish Corp.
Rockford Varnish Co.
Roxalin Flexible Lacquer Co.
Rudd Lacquer & Sealer Corp.
Solvents Recovery Service, Inc.
Gilbert Spruance Co.
The Stanley Chemical Co.
Sun Oil Co.
H. V. Walker Co.
The Watson-Standard Co.
Zapon Division, Atlas Powder Co.
Zapon-Brevolite Division, Atlas Powder Co.

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Hammond Chemical Service
Solvents Recovery Service

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Industrial Tape Corp.
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Paasche Airbrush Co.
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The Clinton Co.
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Flood & Conklin Mfg. Co.
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Lilly Varnish Co.
Maas & Waldstein Co.
Martin Varnish Co.
Oxford Varnish Corp.
Rockford Varnish Co.
Roxalin Flexible Lacquer Co.
Rudd Lacquer & Sealer Corp.
The Schaefer Varnish Co.
Gilbert Spruance Co.
The Stanley Chemical Co.
Stille-Young Corp.
Varnish Products Co.
H. V. Walker Co.
Wipe-on Corp.
Zapon Division, Atlas Powder Co.
Zapon-Brevolite Division, Atlas Powder Co.

TUMBLING EQUIPMENT
The DeVilbiss Co.

TACK RAGS
Wm. A. Juergens Co.

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The Egyptian Lacquer Mfg. Co.
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Lilly Varnish Co.
Maas & Waldstein Co.
Martin Varnish Co.
The Mitchell-Mayer Co.
Oxford Varnish Corp.
Rockford Varnish Co.
The Schaefer Varnish Co.
The Sherwin-Williams Co.
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